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# CALIFORNIA AND WESTERN MEDICINE

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## ROCKY MOUNTAIN SPOTTED FEVER, TULAREMIA, AND RODENT PLAGUE\*

BRIEF DISCUSSION OF THESE SPECIFIC DISEASES  
IN THEIR BEARING ON PUBLIC HEALTH  
IN WESTERN STATES

By J. C. PERRY, M. D.  
San Francisco

THE particular diseases of Rocky Mountain spotted fever, tularemia, and rodent plague have been selected for brief discussion. Each is a disease occurring primarily or principally in the Western states, and one, plague in ground squirrels, exists only in one state.

These three diseases have a direct bearing on the public health of the communities in which they are found. The purpose of this paper will be to stress this phase and give only such general data as may be necessary for a connected and intelligent presentation of the subject.

### ROCKY MOUNTAIN SPOTTED FEVER

The first of these diseases to be considered is Rocky Mountain spotted fever, because it constitutes a definite public health problem in at least three Western states.

*Historical.*—Although this disease has been known in Idaho and Montana since 1873, it was not until 1899 that it began to attract marked attention—after the presentation of a paper by Dr. C. E. Maxey of Boise, Idaho.

Rocky Mountain spotted fever has long been a blight on the Bitter Root Valley in Montana, where the most virulent type occurs, and the Montana State Board of Health since 1902 has been actively engaged in trying to solve the problem of transmission and prevention of this disease. That board sought outside aid and secured the services of Doctors L. B. Willson and W. M. Chowning, who carried out the first serious laboratory study of the disease. They suggested, in their report of 1902, the rôle of the ground squirrel (*Citellus Columbianus*) and the tick (*Dermacentor Andersoni*) as host and transmitter, respectively.

Following these investigations came others by Ashburn, Craig and Keiffer of the Army, and several officers of the United States Public Health Service (one of whom was McClintic, who contracted the disease and died). The most note-

worthy among these early investigators are the martyred Rickerts and his associates. They demonstrated: that infected ticks exist in nature and that by their bites the disease could be reproduced in guinea-pigs; that ticks infected by feeding on infected animals may transmit the infection to healthy susceptible animals; and that infected female ticks transmit the disease to their young through their eggs.

*Geographical Distribution.*—Since the disease exists in ticks (*Dermacentor Andersoni*) in nature, Rocky Mountain spotted fever may occur in any areas where the dermacentor is found. However, this need not be a general distribution, but only in some specific portion of such an area; as the disease exists in definite foci, and the virulence of infection may vary decidedly even in adjacent areas.

The infested regions include the northern part of the Rocky Mountain region in the United States, and the river valleys and sagebrush plains to the west, namely, western portion of North Dakota and South Dakota, almost the entire state of Idaho, Montana, Wyoming and Colorado, the northern portion of New Mexico, Utah and Nevada, eastern half of Washington and Oregon, and the northeastern corner of California.

*Laboratory Investigations.*—Spencer and Parker of the United States Public Health Service, who were detailed to work with state health authorities, in recent years have secured some valuable data regarding the infectivity of ticks and the action of the virus under different conditions.

These investigators found that the virus of spotted fever survives in the tissue of infected ticks through extremely cold weather, but that the virus was apparently attenuated. Experiments were carried out with so-called drag ticks, which are unfed, wintered ticks in nature, and also with ticks infected in the laboratory and placed outdoors for the winter months.

It was established that when guinea-pigs were inoculated with these ticks, spotted fever was not produced, but an immunity was conferred in a large percentage of the guinea-pigs. However, when other wintered ticks of the same lot were incubated for two days, or were allowed to feed on animals for forty-eight hours, they produced the fever when fed on or inoculated into guinea-pigs.

In this connection it may be stated that animals are considered immune when spotted fever does not develop, following an injection of one cubic centimeter of citrated heart's blood of a guinea-

\* From the United States Public Health Service, San Francisco. By J. C. Perry, Senior Surgeon, U. S. P. H. S.

\* Read before the California Medical Association, in General Meeting, at the Fifty-Seventh Annual Session, April 30 to May 3, 1928.

pig at the height of the infection, but does develop in control animals.

The following table, taken from a report by Spencer and Parker, showing the result of tests with these (drag) ticks proves of interest:

#### Drag Ticks Infectivity Tests

|  |     |
|--|-----|
| (a) By direct inoculation:   |     |
| Total tests completed.....   | 101 |
| Tests resulting in spotted fever.....  | 0   |
| Tests resulting in immunity.....   | 29  |
| Tests negative.....  | 72  |
| (b) By combined feeding and inoculation (including tests in which the pig sickened with spotted fever after feeding alone, inoculation therefore being omitted): |     |
| Total tests completed.....   | 65  |
| Tests resulting in spotted fever after feeding.....  | 10  |
| Tests resulting in spotted fever after inoculation, ticks having previously fed.....   | 10  |
| Tests showing immunity from feeding and inoculation.....   | 8   |
| Tests negative from feeding and inoculation.....   | 37  |

The foregoing is particularly interesting in showing that infected, unfed, wintered ticks produce immunity, and that in order to convey the fever, reactivation of the virus either by incubation of ticks or feeding is necessary. The factors operative in increasing the virulence are not clearly known. However, the feeding in the majority of instances must be from ten to forty-eight hours. This need for prolonged feeding may furnish an explanation of the comparatively small number of human cases which occur in even badly infected locations, as no doubt many ticks that attach themselves to man are removed before reactivation has taken place.

It was also noted that virus of infected ticks to which 0.5 per cent of phenol was added, when injected into guinea-pigs, did not produce spotted fever, but did bring about relative degrees of immunity.

Taking cognizance of these facts, Spencer and Parker have prepared a vaccine from infected ticks; and its protective value having been demonstrated in guinea-pigs, rabbits and monkeys, its use has been extended to man.

*Relation to Public Health in the Community.*—Spotted fever has long constituted a public health problem in Montana and Idaho and may become so in other territory where infection exists, with the occurrence of occasional human cases.

A large number of small rodents, particularly ground squirrels (*Citellus Columbianus*) chipmunks, rock squirrels and woodchucks, are susceptible, and these animals constitute a permanent reservoir of infection in districts where the disease exists. However, there is no evidence that the infection is highly fatal among them. Ticks (*Dermacentor Andersoni*) perpetuate the infection by feeding on these rodents; carry the infection throughout their life cycle, and transmit it through their eggs to the next generation.

When consideration is given to these facts the stupendous task that has confronted health authorities can be visualized. Until recently the preventive measures have been directed against these

small rodents and ticks through such procedures as clearing away brush, burning over the area, destruction of small rodents, dipping of domestic animals and sheep grazing. These methods have produced no appreciable reduction of human cases; in fact, such measures can never be effective on account of the large areas where infection exists and of the prohibitive cost of such undertakings.

*Vaccination.*—The control of this disease can probably be effected if a protective vaccine in sufficient quantity becomes available for the vaccination of those persons, who from their occupation, must expose themselves in infected areas. The following statistics available from use of a vaccine prepared by Spencer and Parker are interesting.

In 1925 thirty-four persons were vaccinated, chiefly laboratory employees and field workers whose duties constantly exposed them to infection, and only one case of spotted fever, milder in type, developed, the patient going on to recovery.

In 1926 and 1927 some 1872 persons living in Bitter Root Valley, where the most virulent type exists, were vaccinated, and no case of fever occurred among them. In a nonvaccinated group, fourteen cases occurred, with twelve deaths. In 1927, among a group of 319 sheep herders in Idaho, 115 were vaccinated. There were nine cases among the nonvaccinated and two among the vaccinated (both of whom recovered). In 1926, in the same group, thirteen cases occurred among the 221 not vaccinated, and no case among the ninety-four vaccinated.

In a group of 300 nonimmune sheep herders in Wyoming ninety-five were vaccinated, with no outbreak of the disease, whereas there were seven cases of spotted fever among the nonvaccinated.

*Comment.*—While these statistics are small and the results obtained should not be interpreted as conclusive evidence, they are at the same time highly suggestive that a protective measure has been found against this disease. Furthermore five mild infections, with prompt recovery, have occurred in laboratory workers who had been vaccinated, whereas previous to the use of vaccine the five laboratory infections which occurred were fatal. This indicates that in event absolute protection is not afforded, the virulence of the infection is modified to the extent that cases developing are mild in type.

#### TULAREMIA

Tularemia should be of sufficient interest to the physicians of California to justify its mention before this association, because the causative micro-organism was first discovered in California, and the name Tularemia has been derived from Tulare County, in this state.

*Historical.*—McCoy and Chapin discovered the micro-organism of the disease in 1911, in ground squirrels from Tulare County, California, while making routine examination of ground squirrels from several counties, to determine if bubonic plague infection existed among them. Some of these animals presented gross pathological lesions resembling to some extent those of plague, but

animal inoculations and bacteriological examinations proved this was a new infection, and for want of a better name they called it "Plague-like Disease." Since that time the disease has been found in ground squirrels in several other localities.

Francis in his investigation of "Deer-Fly Fever" in Utah (1919), found that the micro-organism isolated from human cases, through inoculation of guinea-pigs with blood from patients, was identical with that previously described by McCoy.

Taking cognizance of the fact that this disease in rodents was first found in those from Tulare County, Francis named the disease tularemia and the causative micro-organism *Bacterium tularense*.

**Distribution in Nature.**—(1) Ground squirrels; (2) wild rabbits and hares; (3) wild rats; and (4) wild mice, have been found infected with *Bacterium tularense*.

While tularemia has been found in all the rodents specified, the wild rabbits and hares constitute the great reservoir of infection. Wherry and Lamb isolated *Bacterium tularense* from cottontail rabbits found dead in southern Indiana. Francis cultured tularemia from guinea-pigs which had been inoculated with the spleens of seventeen jack rabbits shot or found dead in Utah, the spleen of a snowshoe rabbit found sick in Montana, and the livers of ten cottontail rabbits bought in the Washington, D. C., market. Numerous observers have reported sick and dead rabbits in communities where human cases of tularemia were occurring.

Dieter and Rhodes in 1925 cultured three strains of *Bacterium tularense* from guinea-pigs which had been inoculated with tissues of rats which had been trapped in the city of Los Angeles. These observers were engaged at the time in examining rats for plague.

The writer of this article (Perry), in September, 1927, isolated *Bacterium tularense* from wild meadow mice (*Microtus Californicus Aestuariensis*) by guinea-pig inoculation. These mice were obtained from a locality in Contra Costa County, California, where an epidemic disease affecting mice was prevailing. Large numbers of sick and dead mice were noted. A recheck over this and adjacent areas where infestation had been heavy, showed very few mice remaining, so that it may be safely inferred that the tularemia outbreak among the mice caused a large mortality. This is the first and only record of the infection having been found in wild mice.

While tularemia first attracted attention in the Western states, particularly Utah, as "deer fly fever," the disease is now found widely scattered and has been reported in thirty-nine states and the District of Columbia, as well as in Japan. The nine states from which cases of tularemia have not been reported are Maine, New Hampshire, Vermont, Connecticut, Massachusetts, Rhode Island, Delaware, Wisconsin, and Washington.

**Mode of Transmission.**—Tularemia is transmitted to animals by blood-sucking insects: lice, flies, and ticks. The last may be considered as a permanent reservoir of infection. They carry the

infection over winter, harbor it throughout life and transmit it to the next generation through their eggs.

Transmission to man from animals occurs: (1) by bite of the horsefly (*Chrysops discalis*); (2) by bite of the wood tick; and (3) by contamination of hands or conjunctival sac with portions of the internal organs or with the body fluids of infected rabbits, ticks or flies.

Any of the above agents may be operative, but most of the human cases of tularemia are caused by the specific acts of the individuals by which they inoculate themselves.

In connection with the foregoing the following is taken from an analysis in a recent article, made by Francis, concerning the source of infection in 292 human cases. That analysis showed that 23 of the patients had been fly-bitten, 44 had been tick-bitten, and 225 had dissected or dressed rabbits.

**Occupation.**—The largest number of cases occur among farmers and their families; the second group in frequency are market men, housewives, and cooks; hunters occupy third place; and laboratory workers constitute a large group.

It is not the purpose of this article to discuss tularemia fully, but only to present such salient points as should be taken into consideration from a public health standpoint. Therefore types of the disease, symptoms, diagnosis, including bacteriology and pathology will be omitted.

Let it suffice to say that physicians who bear in mind the following tetrad will seldom fail to correctly diagnose the disease: (1) A history of having dressed or dissected a wild rabbit or of having been fly or tick-bitten. (2) A primary lesion of the skin in form of a papule followed by a persistent ulcer, or a primary conjunctivitis followed by an ulcer of the conjunctiva. (3) A persistent enlargement in the lymphatic glands draining the region of the ulcer. (4) A fever of two or three weeks' duration.

**Relation to Public Health of the Community.**—When consideration is given to the fact that only a few human cases of tularemia have been reported in California, although there is infection in wild rabbits, ground squirrels and wild mice, it seems evident that tularemia does not constitute a public health problem in this state. In other localities, particularly Utah and Montana, specific areas may demand the attention of health officers in rural communities. Tularemia is certainly of economic importance because farmers become infected at a season when their labors are most required, and when the disease is acquired the person afflicted is incapacitated for months on account of the slow convalescence.

No protective vaccine has been perfected. The weapon of defense is education, and district health officers can render valuable service by presenting to physicians and to the public the facts concerning the disease, and the means by which it is contracted. Simple precautions are all that are necessary; such as wearing rubber gloves when dressing or handling suspected animals, avoidance of soiling hands with body fluids of rabbits, ticks,



and flies, and prevention of bites from flies and ticks in regions in which sickness is occurring among wild rodents.

#### PLAGUE IN GROUND SQUIRRELS IN CALIFORNIA

Of particular interest to health officials in California is the existence of plague in ground squirrels over a large area in the state. This constitutes the only focus of plague in the United States, and under the present scheme of operations it will remain indefinitely as a potential source of danger and a grave menace to the community in which it exists.

Plague in ground squirrels was first bacteriologically proven in 1908, but investigations carried out at that time showed that the disease existed in these rodents prior to the date of determination; and, furthermore, reports indicated that ground squirrels in the East Bay counties died from some epizootic as early as 1900.

A campaign was started in Alameda and Contra Costa counties in the spring of 1909 by the Public Health Service, working in cooperation with state and local authorities, for the purpose of determining: (a) the extent of infection, and (b) the eradication of determined foci of infection by intensive poisoning operations against the squirrels. This work was extended to include the following ten counties: Alameda, Contra Costa, Merced, Monterey, San Benito, San Joaquin, Santa Clara, Santa Cruz, San Mateo, and Stanislaus, and was continued until 1917. Plague foci in ground squirrels were proven in all these counties.

In 1920 it was possible to carry out collection and examination of squirrels in seven of these original counties, and plague infection was found in each.

*Present Conditions.*—Plague undoubtedly exists in ground squirrels over a wide area, and because the work it was possible to accomplish from 1909 to 1917 under large appropriations, and when the danger was fresh in the minds of the people, did not eradicate but only controlled the disease, the future outlook is not bright.

In 1921 there were two human cases of plague in San Benito County, and plague squirrels were demonstrated in 1926. Both human and rodent plague was found in Alameda and Santa Cruz counties in 1922, and one human case was contracted in Monterey County in 1923.

In 1924 there occurred an exacerbation of plague in ground squirrels and there was unusual mortality in squirrels in San Benito and Monterey counties and a virulent outbreak of rodent plague in San Luis Obispo County. In October and November of 1924, a violent form of pneumonic plague was discovered in Los Angeles.

Shooting operations were carried out by the California State Department of Health in 1927, although only two hunters were employed and the number of squirrels shot and examined was relatively small. Plague foci in ground squirrels were shown to exist in Contra Costa, Santa Cruz, and Monterey counties. If sufficient appropriations had been available for placing on duty a

large number of hunters, it is believed plague would have been demonstrated to be present in other counties.

In 1927 one human case of plague occurred in Contra Costa County and another case occurred in February, 1928, from handling infected squirrels trapped within the city limits of Santa Cruz.

*Incidence of Infection.*—As in rats, the percentage of infected squirrels to the total is low, but in proven foci of infection it may be high, as will be later shown for San Luis Obispo County in 1924.

In 1902 a total of 19,507 squirrels were examined in the laboratory, and 108 were found plague-infected. This gives a percentage of infection of .55. This indicates results of general shooting operations over large areas to determine foci of infection.

Operations around infected centers yield a much higher incidence, and the following are cited in illustration: 407 squirrels obtained within a radius of two miles around a focus in Contra Costa County showed 2 per cent infected; the examination of 259 squirrels shot within a radius of one mile of a center where a human case occurred, gave 3.5 per cent infected; in San Luis Obispo County the examination of a limited number of squirrels shot at a point where four dead squirrels had been picked up and proven positive yielded the enormously high percentage of 19.

The incidence of infection in the ground squirrels shot and examined by the State Department of Health in 1927 was .47.

*Existing Danger.*—As long as there are foci of plague infection there is danger to the communities in which they exist and to other places by extension of infection from those foci.

The gravest danger is that of rural plague becoming urban, through the transmission of plague to the rats of populated centers from the ground squirrels in the same environment. These rodents come together in the outskirts of towns and have been caught from the same burrow.

A second danger is that of human plague from contact with infected squirrels. A number of such cases have occurred, and nearly every year there are one or more victims. While in the majority of such instances there has not been any spread of the disease from the affected individual, it is not safe to assume that this will be the result, since such human cases may be the starting point of a serious outbreak, as evidenced by the occurrence of fourteen cases of pneumonic plague in Oakland during 1919, and of some thirty-two cases of pneumonic plague in the Los Angeles outbreak in 1924.

From the nature of the outbreak of plague in Los Angeles, which was mainly pneumonic, the type generally transmitted by marmots, and the determination of plague-infected squirrels within the city limits in the areas adjacent to where the human cases occurred, it is quite probable that the infection in that city had its origin in infected

ground squirrels transmitting plague infection to rats.

*Remedial Measures.*—These measures can be discussed under (a) eradicated measures and (b) control measures.

If it were possible to exterminate the ground squirrels the plague infection would be eradicated. However, when thought is given to the degree of infestation it will be realized that the extermination of these rodents is an impossible task. Certainly under the procedures now being carried on, the extermination of squirrels or the eradication of plague infection in them will not be accomplished.

The only method of eradication of plague among squirrels that appears to the writer, is an intensive shooting campaign over large areas for the purpose of determining foci of infection, and then intensive work for the extermination of the squirrels at and around these foci of infection. Such a campaign would be expensive and necessitate much larger appropriations than are now being made, but such expenditures, even if large, would be economy in the end and would accomplish results impossible to obtain under past or present procedures. Under this plan it is believed that plague infection could be eradicated. The destruction of squirrels in noninfected areas would resolve itself into an economic problem.

The State Department of Health is the logical agency to carry out these operations, and sufficient appropriations should be allowed that organization to permit of an extensive shooting campaign to determine foci of plague among ground squirrels. A start in that direction was made last year, and it is understood that a similar campaign will be carried out this year. However, sufficient funds should be made available to enable the prosecution of intensive work.

After the determination of foci of plague infection it might be possible, through the Horticultural Commissioners of the counties, to have enacted intensive eradicated measures around such determined foci.

If the ideal is unobtainable, what control measures can be employed to effect a reasonable degree of safety? This objective can be obtained by local intensive operations for the purpose of bringing about squirrel-free zones around centers of population, especially around the cities. Furthermore, this measure should be carried out around towns, villages, schoolhouses, and rural dwellings. The work carried out at the present time is localized control and not eradicated.

*Plague in Urban Communities.*—This discussion would be incomplete without some reference to plague in cities and towns, as remedial measures which are different from those employed against ground squirrels would have to be directed against rats.

It is of paramount importance in cities infected or that have been infected with plague to institute those measures which experience has taught are essential either in the eradication of plague, or for placing such communities in a sanitary condition from a plague standpoint that would render them

less infectible, and to facilitate the eradication of the disease if lodgement should occur.

The only efficient measure is the rat-proofing of buildings and the destruction of rat harborages. This cannot be too strongly emphasized, and all seaport cities should have such ordinances in effect; and, furthermore, these ordinances should be rigorously enforced by the health departments of such communities.

Cities that have been infected with plague must be regarded as liable to reinfection unless proper rat-proofing of buildings has been carried out.

The second measure that should be practiced in cities that have been infected with plague is a continuous rat survey, and this should be sufficiently extensive to give a fair cross-section of the rodent population. This will prove of marked value from both a public health and economic standpoint. It would give early information of any foci of infection and permit of prompt eradication before the disease had spread. The economy that would result from this practice can be easily visualized.

The task is stupendous, but as the work prosecuted against ground squirrels, with varying degrees of intensity for nineteen years, has not eradicated the infection in many of the counties in which it has been proven, it seems imperative that more vigorous action should be taken to eliminate this potential danger.

76 New Montgomery Street.

## EMOTIONAL INFLUENCE UPON THE GASTRO-INTESTINAL TRACT\*

By HOWARD E. RUGGLES, M. D.  
San Francisco

DISCUSSION by Raymond G. Taylor, M. D., Los Angeles; Orrin S. Cook, M. D., Sacramento; Robert R. Newell, M. D., San Francisco.

EVIDENCE of the close connection between the nervous system and the gastro-intestinal tract is always before us. Sinking feelings upon the receipt of bad news; the sudden epigastric cramp just before an automobile accident, and the often quoted relaxation of sphincters at moments of great fear are known to everyone. The organic changes associated with these states have not been demonstrated roentgenologically. But the intestine is equally responsive to emotional stimuli of lesser degree, and the signs of their presence are constantly before us upon the fluoroscopic screen.

### CONFIRMATORY HISTORIES

The chairman's address before the medical section of the American Medical Association last year dealt with this subject, and he mentioned the following case:

An apparently normal business man developed an obstruction in his sigmoid during an emotional crisis where he had to sacrifice either his principles or his position. Opaque enema showed a complete block, and the patient only escaped

\* Read before the Radiology Section, California Medical Association, at its Fifty-Seventh Annual Session, April 30 to May 3, 1928.



laparotomy because his physician was wise enough to repeat the examination several times.

Within the year a woman was sent to operation because of an irregular defect in the ascending colon, seen on different days, to find the area perfectly normal when the abdomen was opened. She was an extremely nervous individual with a long surgical history, and insufficient emphasis had been put on that side of the story.

Recently I was much impressed by the extreme degree of spasm in the sigmoid and descending colon of a woman surgeon. It took fifteen minutes to outline the colon by enema, owing to a marked general constriction. I ascribed the condition to apprehension over the possibility of a malignancy, as she had just had two cases of carcinoma of the colon in particularly important patients. The fact was that she was suppressing a blow to her pride. The family of one patient had called in another surgeon, although she had always cared for them previously. The effort to keep the hurt out of her consciousness tied her colon in a knot.

A patient with a rather atonic stomach was returned to her dressing room for a few minutes to permit another examination to be completed. She became enraged at this procedure and when she again appeared behind the screen her stomach had lifted, contracted to half its former size and showed rapid, vigorous peristalsis. The stomach subsided with her anger and soon returned to its normal state.

#### THERAPEUTIC APPLICATION

There is a practical application of mental control of the pylorus. Frequently when the duodenal cap is slow in appearing, a short conversation with the patient on the subject of favorite foods will produce a prompt relaxation of the pyloric sphincter.

At least one-third of our gastro-intestinal patients have no organic lesion, yet their symptoms are sufficiently important to send them to a physician. If their nervous systems are moderately stable and the inciting factor is removed, they return to normal health in time. But that great collection of unfortunates with a substandard mental and nervous equipment or those whose environment produces a chronic emotional strain, we have with us always. You have all seen patients who go along comfortably but return with another duodenal ulcer as soon as an additional load is thrown upon them in the way of worry, fear, or overwork. It is at times difficult, in the brief acquaintance we have with these patients, to dig out the causative factor, but it is time well spent to do so. Where we find unusual spasm or stasis present the nervous background should always be investigated. It is of the greatest importance to repeat the roentgen examinations on such individuals. The most characteristic finding with them is the variability of the picture from hour to hour and from day to day.

Fifteen years ago Cannon pointed out the profound changes which fear, pain, and rage produce in laboratory animals—the relaxation in stomach,

small intestine and colon, dilatation of the pupils, acceleration of the heart, pallor, increase in blood sugar, and the other sympathetic nerve effects. His ingenious explanation classes them as reflexes and assumes that their purpose is to assist the individual in times of conflict. In our present existence the conflicts are no longer physical but mental. However, they call for the same visceral responses which may be marked in emotional or hypersensitive individuals.

#### DISTRIBUTION OF INVOLUNTARY NERVOUS SYSTEM

The distribution of the involuntary nervous system is of considerable interest. The esophagus and cardiac end of the stomach are supplied entirely from the craniosacral division. The sympathetic first appears in the pyloric end of the stomach and both systems continue to the ileocecal region. Practically all the large intestine is innervated by the sympathetic. The lower sigmoid and rectum have both. In general the sympathetic is inhibitory and the craniosacral motor in effect, but variations from the rule are frequent. The areas of particular importance, from our standpoint, are those where the two sources of supply overlap—about the pylorus, in the ileocecal region and the sigmoid. Except for the descending colon the sections supplied by one system alone show little evidence of emotional influence. My impression is that men are more apt to show mental strain about the pylorus, and women in the colon. Brunswick investigated the effects of emotional stimuli on the stomachs and rectums of a small series of medical students. He found in general that decreased tone accompanied unpleasant emotional states and pleasant ones caused an increase. Disgust was an exception, producing an increase. Study of the gastrointestinal tracts of a series of mental cases gave interesting results. In actively hallucinating paranoid schizophrenics, where the most intense emotions are experienced which continue for long periods of time, stomachs are atonic and colons slow in emptying, due to sympathetic stimulation. Of all portions of the tract the colon is most susceptible to sympathetic control.

It is of interest in this connection to review the question of ulcer. No matter what one may feel to be the cause of ulcer, it cannot be denied that there is a great nervous element in many of them. The tendency to recurrence under stress—the association of ulcer with a fairly characteristic type of personality and the chronicity of the lesions when the emotional background cannot be controlled are suggestive. Recently Stahnke, by stimulation of the vagus, has been able to demonstrate a neurogenic regulation of the form and position of the stomach in dogs. Chronic stimulation produced defects in the gastric mucosa and alterations in acidity.

Wilkie, in Great Britain, found duodenal ulcer in men three times more common than in women. Nolke's figures in Germany are four to one, and in our series of nine thousand gastro-intestinal cases, covering six years, there are twelve hundred ulcers, also at a ratio of four to one. Gas-

tric ulcers are one-twelfth as common as duodenal and they are distributed two to one in favor of the men. This difference in distribution may be assumed to be due to the greater stress of modern life upon the male or, what seems more likely, to a greater tendency for emotional impulses to spread through the sympathetic system in the female and the craniosacral in the male. Certainly we see more atonic stomachs and intestines in women than in men.

Spasm of the colon in a mild form is the most common cause of constipation and as such is a matter of great concern to a large portion of our population. Most colons would perform more satisfactorily if allowed to go their own course without interference. In a rough way the tone of the colon corresponds to the general nervous tension. In times of stress we see either local or general spasm most evident in the sigmoid. It may be of some significance that diverticula (except the congenital form) are prone to occur at the common sites of spasm. They may be the late results of chronic constriction.

In our experience antispasmodics have little influence upon these conditions. Nitrites are sometimes useful but, like atropin, are erratic in their effects. Theoretically sedatives should be much more effective. We have had some success with luminal and it may prove valuable.

384 Post Street.

#### DISCUSSION

RAYMOND G. TAYLOR, M. D. (Hospital of the Good Samaritan, Los Angeles).—We are indebted to Doctor Ruggles for presenting this important but neglected angle of gastro-intestinal disease or symptoms. While there are no rules to govern, it would seem that his suggestion to repeat the examination when no organic lesion is found, or when one is in doubt, is a good one. My experience would lead me to believe that the most common point for spasm engendered by the emotions is in the lower descending colon rather than in the sigmoid.

I agree heartily with Doctor Ruggles that the ordinary antispasmodics are unreliable and of but little use. Considerable personal experience with luminal, especially in spasm of the colon, leads me to believe it more often produces results than the more commonly used drugs.

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ORRIN S. COOK, M. D. (Mater Misericordiae Hospital, Sacramento).—This is a timely paper on an important subject about which very little has been written.

I have recently seen three patients, two of whom were high-pressure business men, with quite marked gastro-intestinal symptoms. The only x-ray findings were marked spasm and irritability of the colon, and symptoms were relieved entirely by appropriate treatment. The third patient was a very nervous woman, who had had her appendix removed for the same symptoms without relief, and in whom the x-ray findings were the same as in the two men.

Undoubtedly patients are at times subject to surgery whom the roentgenologist may save from unnecessary operation if he will bear this condition in mind.

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ROBERT R. NEWELL, M. D. (Stanford University Hospital, San Francisco).—Doctor Ruggles has made an interesting entry on a difficult field. Morbid physiology is a much less steady foundation for diagnosis than is morbid anatomy. This is partly because it is

less narrowly topical. Due to the functions of the nervous system and the hormones carried by the blood, disease in one location may cause disturbance of physiology at other locations, sometimes very remote ones.

If the roentgenologist desires merely to make diagnoses wherever possible, he will perhaps wisely limit his observations to evidences of anatomical lesions. But if he has a broader view of his obligations, if he wishes to be of maximum service to his clinical consultant, he will note and report also the variations in constitution and in physiology which his methods may reveal.

That disturbed physiology from remote causes may at times lead to mistaken diagnosis cannot be denied. Doctor Ruggles has cited some interesting instances. But I do not believe these are frequent. More often we find these functional disturbances interfering with our roentgenoscopic visualizations without actually misleading us. We are loath to call a viscus anatomically intact until we can see it in its entirety. That these functional obstructions to roentgenological certainty can often be removed by attention to the patient's emotional state is, I think, the most important thing in Doctor Ruggles' paper. We will be well rewarded when we take the time to repeat unsatisfactory gastro-intestinal examinations and exhibit the sympathy necessary to relieve unsatisfactory emotional states. I have been dumbfounded at the miraculous effect sometimes observed in a stubborn pylorus following a minute's conversation on the subject of good things to eat.

In regard to antispasmodics, they may be two-edged. That a certain sign disappears temporarily on antispasmodic medication does not prove it to be of no importance. I believe it is often possible to relieve the topical spasm of duodenal ulcer by full doses of atropin.

#### PSYCHIATRY IN ACTION \*

By ROBERT L. RICHARDS, M. D.  
San Francisco

DISCUSSION by G. E. Myers, M. D., Los Angeles; Edward W. Twitchell, M. D., San Francisco; Joseph Catton, M. D., San Francisco.

A LITTLE more than one hundred years ago the mentally sick were lifted from their loose straw and dungeons to mattresses and prison cells. About 1840 the medical superintendents in Pennsylvania and the East advocated and practiced a plan of treating and curing the mentally sick that compares favorably with modern methods. But it was not until the nineties that hospital care and treatment was generally adopted. In 1909 Mr. Clifford Beers formed the National Mental Hygiene Society and introduced community standards and plan as opposed to the institutional and political plan. In 1912 Dr. E. E. Southard in the Boston Psychopathic Hospital adopted the ideal of a community hospital and community service. Since then in rapid succession have followed outpatient clinics from Maine to California, and even traveling clinics in Iowa, Colorado and a few other places. Since 1922 child guidance clinics have been established from coast to coast and have contacted and coöperated with schools, social agencies, juvenile courts, and problem children in homes. Industry has found it profitable to employ full-time psychiatrists to care for the mental

\* Read before the Neuropsychiatry Section, California Medical Association, at its Fifty-Seventh Annual Session, April 30 to May 3, 1928.

hygiene of employees, to reduce labor turnover, to lessen accidents, and to increase efficiency. Families of their own accord are requesting preventive work for mental problem children and aid in caring for chronic mental patients at home. In New York about four thousand patients have been removed from state hospitals and cared for in the communities. Even in general hospitals one now finds in the case histories mention at times of the mental attitude of patients to the disease and rough estimates of the type of personality. Occasionally in general medical journals one now reads of the influence of mental factors upon disease and the need of recasting medical education in psychiatry. In general hospitals and out-clinics, mental cases are now being cared for as accurately and as successfully as medical and surgical cases are cared for. In 1909 the United States Army formally recognized psychiatry as a specialty, and in 1917 established an efficient neuropsychiatric service in the war. Mental deficiency and epilepsy are now definite sections in the American Psychiatric Association.

All this means that psychiatry has come from behind its walls and gone into action to meet the increasing demands of the community. Psychiatry is learning to speak in terms understood by medicine in general, by social organizations and by the public at large. This also means that the medical student must know something of mental facts and diseases and the possibilities and the limitations of psychiatry. The student must be prepared to meet the demands of the community in which he lives.

#### PSYCHIATRY IN WAR

In the spring of 1917 I met with a small group in New York at the National Committee for Mental Hygiene to organize a military neuropsychiatric service under Colonels Bailey and Salmon. It is interesting to note that the doctors selected for this service rated the highest in the mental test given to the medical corps and equaled the highest standard required in the Army—that of the engineers. Having had charge of the operating of neuropsychiatric boards on the Pacific Coast and of the care of all discharged mentally disabled soldiers from the Rocky Mountains west, I can state that psychiatry met these demands efficiently and cooperated intelligently with the military organization in the prevention and treatment of mental conditions during the war. The only complete mental survey during the war was made at Camp Kearney, and the mental disability discharges later from that division were almost negligible. Psychiatry in action in war was successful. Psychiatry in action in peace can be equally successful. But psychiatry in peace must talk more in terms of human behaviorism and not in technical terms of psychological differentiations.

#### PSYCHIATRY IN PEACE

Recently in the Alameda County community the superior judges demanded that mental cases for commitment receive better medical treatment. In Highland Hospital an improvised twelve-bed ward was made available and has operated satisfactorily to the judges and the community for about two

years. The nursing personnel was almost entirely untrained and was an average general hospital personnel. Part of the time the interns served on a twenty-day basis, but were generally more confused than efficient during the brief service. Later a resident physician, relatively untrained, was obtained and this arrangement has proven more satisfactory. The patients have remained in the ward for treatment and study from two days to two weeks, because of the cooperation of the judges. All cases were given a diagnosis, and all state hospitals reported to us their final diagnosis made at the end of one to three months. This was therefore comparable to a receiving and a final diagnosis in a general hospital. In Cook County Hospital in Chicago the changes of admittance diagnosis after study in the various wards were found to average 15 to 20 per cent. It is well to see if psychiatry is equally successful under similar conditions.

#### COMPARISON OF COMMITMENT DIAGNOSIS WITH THAT OF STATE HOSPITALS

I have selected for a comparison one year's current cases on the psychopathic ward of Highland Hospital. No paroles or parole institutions were used as in Los Angeles. These cases were either safely treated on discharge at home after two days to two weeks' study or they were sent to state hospitals. A few cases sent to homes have subsequently been returned for commitment, but on the whole the psychiatric judgment has been correct and no damage has occurred from this plan. Indeed the community is so constantly seeking the service that many must be refused because of the limited facilities of the hospital.

Two hundred and forty-eight cases were committed to state hospitals in California, and one hundred and sixty-four cases were discharged to their homes without commitment. In these two hundred and forty-eight committed cases by comparing the initial tentative diagnosis with the subsequent state hospital diagnosis we can estimate objectively the accuracy of psychiatry in action. Briefly, I find the following interesting facts:

1. The total or gross divergence in diagnoses was 16 per cent (forty cases). In no instances, however, had this worked to the detriment of the patient.
2. The net divergence in diagnoses was 2.8 per cent (seven cases) where the difference in diagnosis was a radical one and not merely a degree of emphasizing of certain trends.
3. In addition because of inability to secure the serological facts in the time at our disposal, nine cases (3.6 per cent) of paresis were missed. In looking back over our clinical records I am still unable to confirm the state hospital diagnosis in the absence of serological findings in these cases.
4. The greatest divergence in diagnoses (10 per cent, twenty-five cases) was naturally in the groups diagnosed manic depressive psychoses and dementia praecox. Of these twenty-five cases I found that in sixteen cases (6.4 per cent) we had made an original diagnosis of dementia praecox



which was subsequently changed in the state hospital to manic depressive psychosis. On the other hand, in only seven cases (2.8 per cent) had we made an original diagnosis of manic depressive psychosis which had subsequently been changed to dementia praecox in the state hospital. Evidently we were overly cautious and pessimistic as to outlook in a number of cases on short periods of observation of the beginning of the attack and more time was necessary for good judgment.

Our diagnoses in the two hundred and forty-eight cases were: dementia praecox, 63 cases; manic depressive psychoses, 63 cases; neurosyphilis, 27 cases; senile psychoses, 28 cases; alcoholism and alcoholic psychoses, 28 cases; paranoid states, 18 cases; drug addiction 9 cases; epileptic psychoses, 5 cases; toxic psychoses, 5; psychopath with suicide, 2.

#### PSYCHIATRY IN MEDICAL EDUCATION

In medical education so far psychiatry has failed because it has not been understood by the average medical student. What the average medical student does not understand he scorns. He has two favorite mental reactions: (1) that psychiatry is hopeless and he knows nothing about it; (2) that nobody else knows anything about it and he amuses himself by "playing with it." Of course he runs away from a psychiatric patient when danger threatens.

Psychiatry can attack the problem of medical education in two ways:

1. Create a public demand by practical efficient work in the community—a flank attack.

In creating a public demand we shall meet many nonmedical forces who regard all actions as either good or bad and having no scientific conservatism, rush to some imagined goal and form cults and movements of all sorts. Evidently there is need of scientific medical guidance or the end is worse than the beginning. Pragmatic success in treating mental cases is the only basis on which we can approach the community. Diagnosis and prognosis are of value only to scientific medicine. They have no value with, and stir up opposition in a community. As usual the community has tried all the known home remedies for human behavior before the psychiatrist sees the case. Hence you must talk the language of behaviorism and secure practical results or explain the reason why such results are impossible. The final usable human functioning results or protection against unusable human functioning results—these are what the community wants. If you can give them such results you can secure the community support and turn the flank.

2. Change psychiatric instruction to correspond with other medical instruction and, beginning with a physical basis in the brain cortex, work out logically and consecutively to mental diseases and mental problems—a frontal attack. Fortunately in the works of Franz, Lashley and Herrick in this country we have a knowledge of the laws governing cortical action, and there is no more "a large silent area of brain cortex." These laws correspond with what we know of the behaviorism of

animals and of the mental development of the human being.

My main effort is to suggest a scheme of psychiatric instruction in harmony with other medical instruction and confined to the needs of the general practice of medicine. I am aware that the demand in medical education today is for the basic needs of medicine as opposed to specialized knowledge of medicine. It is well, however, first to state two facts in regard to the basic needs of medicine as we know it today:

1. Medicine is now more concerned with efficient living than with prevention of death. Successes in combating infections, health examinations and general sanitation efforts indicate this fact.

2. Practically it is admitted that neuroses form a large part of medical work—even estimated as high as 80 per cent. Faulty mental adjustment is admittedly the basis of neuroses, and medical education must take cognizance of training in seeing and understanding the import of mental facts or give up the treatment of neuroses altogether if fair with the community.

#### SUGGESTED PSYCHIATRIC MEDICAL INSTRUCTION

##### I. BRAIN HISTOLOGY

1. Structure in general of the brain cortex and in what ways it differs from the structure of other bodily organs with the therefore presumptive relation of the brain cortex to the body as a whole.

2. Experiments in discovering how this brain cortex functions as a whole: whether it is silent as to function in three-fourths of its structure; or whether the function is measured in some other way than activity and inactivity as other bodily organs are measured. Laws of human brain function.

3. Evolutionary data as to the functioning of animals with no brain cortex, with the simplest fore brain structure, with more or less automatic midbrains, and with actual brain cortices.

4. Human versus animal behaviorism: how man leaves the instinctive animal level and plans toward some goal; how man starts with the smallest structural and therefore the most plastic beginning and grows through various stages to senility.

5. Personality growth: growth accidents; line of growth determined by location of fixed points; relation of heredity and environment to growth.

6. Analysis of student's own personality trends.

##### 2. BRAIN PATHOLOGY

1. General consideration: Personality always the background. Quantity of mental power always secondary to the line of growth and other qualitative factors. Acuteness or chronicity of the process depends upon etiological factors.

2. Mental lack or defectiveness.

3. Psychopathic personality or deformed growths.

4. Effects of acute and chronic infections and certain poisons on the brain cortex.

5. Type of functional reactions of the brain

cortex vary at different age levels, *e. g.*, childhood, adolescence, adulthood, senility.

6. General types of pathological functioning of the brain cortex associated in part with general bodily conditions.

### 3. GENERAL GROUPINGS OF CLINICAL MANIFESTATIONS OF PATHOLOGICAL BRAIN FUNCTIONING

1. Maladjustments at different instinctive and growth levels leading to neuroses under stress such as hysteria, neurasthenia, anxiety states, etc.

2. Emotional variations of a pathological degree leading to manic depressive psychoses.

3. Deformities of growth leading to paranoid states.

4. Destructive crippling of growth leading to dementia praecox.

5. Destructive changes leading to the mental deterioration of dementias.

6. Explosive changes shown in the excitements of epilepsy, hysteria, arteriosclerosis, certain poisons, and in dream states.

### 4. PREVENTIVE MEASURES

1. Care to establish the necessary basic trend of successful personality growth in the plastic stage of childhood. Birth and other traumas are mentally serious.

2. Influencing personality growth by measures belonging at that mental level and not by adult measures—especially childhood and adolescence.

3. Sex instruction at the proper time and of the different biological or emotional kinds.

4. Avoidance of alcohol, syphilis, and habit-forming drugs.

5. Acute and chronic infections and head traumas mean mental as well as physical care and convalescence.

6. Earlier mental abnormalities with mental treatment and nursing are curable. Many older mental abnormalities are not curable and must remain in a limited environment all their lives. Hence early recognition is a medical responsibility.

Either psychiatrists will select and advocate some plan of action or some chance plan will be formulated by those who do not know that psychiatry long ago passed the stage of psychoses or insanities and is now an important part of community medical work. If an intelligent plan is adopted psychiatry will be understood and no longer be called the stepchild of medicine.

384 Post Street.

### DISCUSSION

G. E. MYERS, M.D. (1052 West Sixth Street, Los Angeles).—In connection with Doctor Richards' paper, I should like to mention some statistics:

In the United States are 140,000 physicians. There are approximately 1,000,000 persons employed in the general field of medicine. Between \$5,000,000,000 and \$10,000,000,000 are invested in hospital buildings and equipment. There are 563 institutions for the care of mental patients, with a capacity of 373,364 beds, and 4322 general hospitals with a capacity of 345,364 beds. Thus, while there are 3759 more general hospitals than hospitals for mental disease, there are 28,000 more

beds in the hospitals for mental disease than in the general hospitals.

The National Committee for Mental Hygiene has stated that, of the children now attending school and college, about "960,000 will enter a hospital for mental disease at some period of their lives, if the present rates for first admissions are maintained." Neuroses alone, according to Dr. William J. Mayo, are responsible for more human misery than tuberculosis or cancer.

There is much that we do not know about medical statistics. The work of the Committee on the Cost of Medical Care, of which Dr. Ray Lyman Wilbur is chairman, is therefore of the greatest importance. After some previous discussion in 1925 and 1926, fourteen persons met in informal conference in Washington on April 1, 1926, to consider problems regarding the economics of medicine. At the close of this conference a committee of five was appointed to formulate a tentative series of studies concerning the economics of medical service and to develop plans for the creation of a committee to be responsible for their conduct. This committee met several times, formulated a tentative list of studies, communicated with a considerable number of physicians, sanitarians, and economists to ascertain their opinions regarding the proposed plans, and arranged a conference in Washington, May 17, 1927, at the time of meeting of the American Medical Association. This conference resulted in the creation of the above-mentioned committee. The committee as now organized consists of forty-two persons—fourteen private practitioners of medicine, six representatives of the public health field, eight representatives of institutions interested in medicine, five economists, and nine persons representing the general public. A five-year program has been outlined for a wide and thorough investigation of the medical situation, with plans for securing reliable statistics which are not available at the present time.

An important part of the investigation will be in the field of psychiatry—"Among what proportion of adults might early symptoms of mental and nervous disorders be discovered which could be successfully dealt with were there qualified specialists available?" "What facts would similar studies reveal among college students, among high school students, and among elementary school pupils?" "For what length of time and with what cost have psychoneurotic patients been treated for general disorders before the true nature of the disability was recognized?" Extremely interesting and reliable data are being secured by the Department of Mental Disorders of the state of Massachusetts, as well as by other organizations, in coöperation with this committee. The cooperation of all physicians should be given.

It is highly desirable that more young men, well equipped through education, should be attracted to the field of neuropsychiatry. The inadequacy of teaching facilities in this field in the past has been deplorable. This situation is being remedied in some quarters at the present time as at the Columbia-Presbyterian Medical Center in New York City, where the magnificent New York State Psychiatric Institute and the Neurological Institute will provide clinical material for teaching purposes.

An outline such as Doctor Richards has proposed is very timely and merits the most careful thought.

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EDWARD W. TWITCHELL, M.D. (909 Hyde Street, San Francisco).—It is just as well that there should be an increasing interest in psychiatry on the part of both physician and laity, as the next generation is going to have greater need of it than had any before. The organism does not adapt itself to changed environment with great rapidity when certain limits are passed. Those whose forebears have been for generations country folk react badly to city life and its stimuli. Even the old-time city dwellers have a multitude of new problems to face in the city of the



present. The increase of competition, the acceleration of pace, the multiplication of noises and hazards and the changed character of foods, all play a part in the etiology of nervous disease. Finally the increased socialization of medical aid by accident and health insurance will end in a vast number of neuroses to be treated at the expense of the state, as the experience of State Compensation Commissions and the Veterans' Bureau has already shown.

It will therefore be likely that the physician of the future will have much more to do with nervous and mental disease than had his brother of the past. We have seen whole groups of disease, such as typhoid, malaria and diphtheria, formerly the mainstay of the family doctor, reduced, some of them, to the vanishing point, but the psychoses and the neuroses are showing no sign of abatement. Men will be needed to treat these diseases, and must be trained in the medical schools.

There is little opportunity for the student to learn the treatment of the neuroses in the medical schools at present. Neurological clinics as now organized cannot give adequate treatment to the psychoneurotic. The work is so time-consuming that the clinic would soon be choked with waiting patients if the needed time were given, and unless this time be given there can be no results.

One of the most needed things and one of the most difficult to achieve for the neurological department, is a satisfactory solution of the problem of the psychoneurotic. Some such program as that suggested by Doctor Richards is much to be desired.

✱

JOSEPH CATTON, M.D. (209 Post Street, San Francisco).—Doctor Richards' paper outlines clearly the increased rôle that psychiatry is coming to play in many of our social problems. He makes an eloquent plea for the proper education of physicians in order that they may meet the newer responsibilities which they are being asked to shoulder. The physician has been taught quite well to care for the disease which a patient has, and very little of how to treat the patient who has the disease. In the relationship "physician-individual patient," it is most important that the physician have an understanding of the whole patient—his background, his environment, his personality type, etc., if he would care adequately for the diseased heart or kidney.

Equally important, however, the physician must learn that society has discovered the psychiatric aspects of pauperism, unemployment, prostitution, drug addiction, and the various forms of delinquency; and the practical hopelessness of caring for a full-blown social failure has been recognized. Fortunately, however, proof is being added each day that investigation by properly qualified psychiatrists may nip in the bud the tendencies toward these aggravated "end-results." I would suggest that one read very carefully Doctor Richards' paper and that, having read it, although one may forget much of his detailed exposition, he should carry away with him the most important indication of Doctor Richards' essay. It is this: that society has discovered that psychiatry offers expert service in connection with community problems. Doctor Richards makes a plea for what should have been, but has not been, obvious: namely, medical schools should prepare a certain percentage of our graduates to give competent psychiatric aid to the community.

✱

DOCTOR RICHARDS (closing).—Medical students tell me they would be interested in studying the brain cortex and its functions (mental facts) as an organ in the human body even if they never studied psychiatry as a specialty. Therefore a scheme was suggested covering such needs of an average medical student. I hope that it will lead to discussion, criticism and adjustment by those responsible for medical curricula. After a study of the brain from a comparative anatomy point of view Sir Arthur Keith estimated that the

human brain had not attained more than 50 per cent of its possible development. Doctor Tilney of New York estimated that the human brain had reached only a 25 per cent stage of development. From the viewpoint of what we already know of brain function and the viewpoint of greater possible development, certainly the brain deserves more consideration than it now receives as an organ in the human body.

## DIAPHRAGMATIC HERNIA\*

By W. E. HUNTER, M.D.  
Salt Lake City, Utah

DISCUSSION by George W. Middleton, M.D., Salt Lake City, Utah; James P. Kerby, M.D., Salt Lake City, Utah.

DIAPHRAGMATIC hernia, by reason of a recent death in a newborn child about four months ago, became a subject of special interest to me. I had begun searching the literature and had it on my desk when a second patient was brought to the office with a traumatic diaphragmatic hernia. The study of these two cases was the means of discovering a third patient with diaphragmatic weakness. It is these three cases which I report at this time.

### CASE REPORTS

CASE 1.—On January 18, 1927, Mrs. B. of Mount Pleasant engaged me to care for her during her third pregnancy. The previous pregnancy was normal and the baby was born without difficulty, but died shortly following birth. It was to prevent a repetition of the previous labor that she was brought to Salt Lake.

The present pregnancy was accompanied by the usual discomforts of childbearing, but otherwise was normal in all respects until July 23, 1927, when the patient complained of "shortness of breath" and a "tense feeling in the abdomen." At this time she was found to be suffering from a beginning hydramnios. The liability to premature labor and the tendency to fetal abnormality in cases of hydramnios was explained to the husband and the patient advised to stay within easy reach of the hospital. On September 12 the patient telephoned that the "membranes" had ruptured and that more than two gallons of water had come away. At the hospital four hours later she gave birth to a six and a half pound baby girl. The labor was not difficult. The child looked normal, but did not cry.

I had just finished explaining to the husband that the baby had no deformity, when I discovered that it was not breathing properly. I severed the cord and began mouth-to-mouth insufflation. I soon discovered I could not insufflate the lungs normally, but instead was forcing air into the stomach. This air became incarcerated, and could not be relieved except by the insertion of a catheter into the stomach. This is not the case in the normally developed baby. A hand applied on the epigastrium will prevent air going into the stomach and when it does enter the stomach it can easily be expelled by pressure. My further examination showed that the heart was on the right side. Later I was able to insert a catheter into the trachea, but even then I could not inflate the lungs as I wanted. By continuous effort the child's heart was kept beating for one hour. An autopsy was obtained after considerable duress, and the condition, as shown in Figure 1, was found.

*Autopsy.*—On opening the abdomen and thorax the appendix was found high in the epigastrium. The stomach was found unrotated and occupied the middle half of the left thoracic cavity, pushing the heart far to the right. The descending and transverse colon occupied its outer half. The left lung was not more

\* Read before the Salt Lake County Medical Society, January 16, 1928.

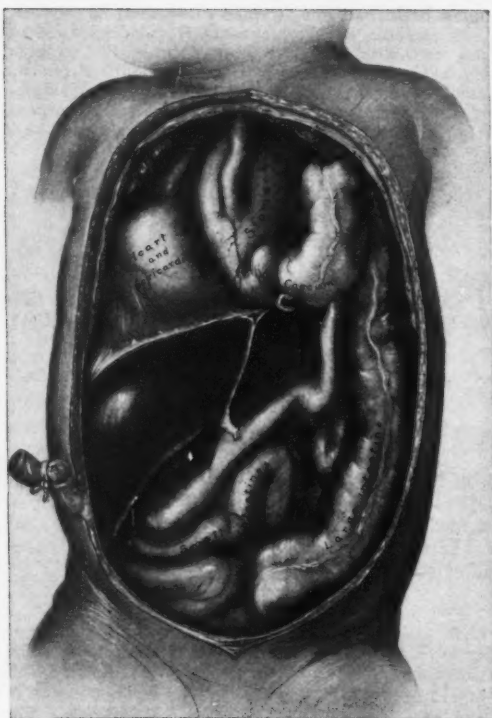


Fig. 1.—Case 1. Drawing showing rudimentary lungs, unrotated undescended stomach and failure of development of the left diaphragm.

than one-fourth the normal size, completely atelectatic and rudimentary. The two lobes were separate, as in the embryo, and looked more like pancreatic tissue than lung. The heart occupied the right thoracic cavity and was apparently normal. The right lung was rudimentary like the left and separated into three distinct lobes. The right diaphragm seemed to be developed sufficiently to hold the liver and form the base of the pericardial sac. The rudiments of the left diaphragm could be felt but not seen. Further post-mortem study was objected to because of sentimental reasons.

Later in discussing the death of the child I was informed by the mother that the attendant at the previous labor found the infant's heart far over to the right side. In a letter from Doctor Aldous, I find such was the case. This I believe is the first case on record where the mother has given birth to two children with this condition.

**Diagnosis.**—Congenital diaphragmatic hernia with arrested development of lungs and unrotated stomach associated with hydramnios in the mother.

**CASE 2.**—The second case was that of Dr. J. of Logan. Age approximately fifty-two. Previous history: Ill health began with stomach trouble in 1897; ruptured appendix in 1910; perforated gastric ulcer in 1912, with gastro-enterostomy. He has had the abdomen opened at other times for stomach symptoms. He has had a cough for two to three months. Influenza pneumonia in 1918. Since then he has been quite free from stomach symptoms. Since 1918 he has had myocarditis with hypertension.

**Present Illness.**—On October 18, 1927, about 9 p. m., while driving down Logan Canyon, the patient's car skidded and rather than let the car run over the embankment he deliberately ran it into the mountain. He states that he was unconscious for five or six hours, but later qualified this assertion by stating he could feel pain in the lower left chest and upper

abdomen. He also suffered considerable difficulty in breathing. The local doctor was called and set a broken arm and sewed up several lacerations about the face and scalp. The patient vomited incessantly during the first night, but has not vomited since. He suffered from hemoptysis for the next three or four days. Fever began the first night and gradually increased until October 23, when patient had a chill and temperature of 101 degrees. Since then his temperature has been as high as 102 3/5, but at other times it has been subnormal. On several occasions he has wheezed like an asthma patient. He says his cough has been better since the accident. In the daytime he feels fairly comfortable, but at night he has had choking spells that almost end fatally. He has had to use the stomach tube to relieve his stomach of gas. He has attacks of dizziness and palpitation which cannot be relieved by digitalis or adrenalin.

The patient walked into our office one week after the accident. He was dyspneic and orthopneic, and complained of pain in the left chest. Breathing was labored.

Examination of the chest showed the heart moderately displaced to the right. The left border of the heart could not be made out because of the hyperresonance of the overlying lung. There was a soft systolic apical murmur. The physical findings over the right lung were essentially normal.

Examination of the front of the left lung showed apparently normal resonance above the clavicle and down to the second rib. Over this area there was vesicular breathing, somewhat accentuated. Below the second rib in front of the axilla there was fairly marked hyperresonance. Breath sounds, whispered sounds, and tactile fremitus were diminished or absent and voice sounds were markedly diminished. Examination of the left lung behind showed fairly normal resonance to the spine of the scapula, and vesicular breathing over this area. From the level of the spine to the lower angle of the scapula there was hyperresonance and diminution to absence of all sounds. From the lower angle of the scapula to the base there was moderate dullness and absent breath sounds.

At the fifth interspace in front at about the nipple line and less marked elsewhere over the hyperreso-

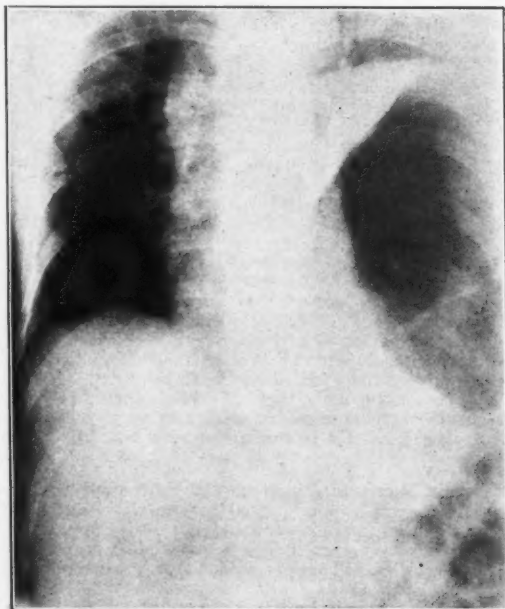


Fig. 2.—Case 2. Traumatic diaphragmatic hernia. The stomach, transverse colon, and spleen occupy most of the left thoracic cavity.

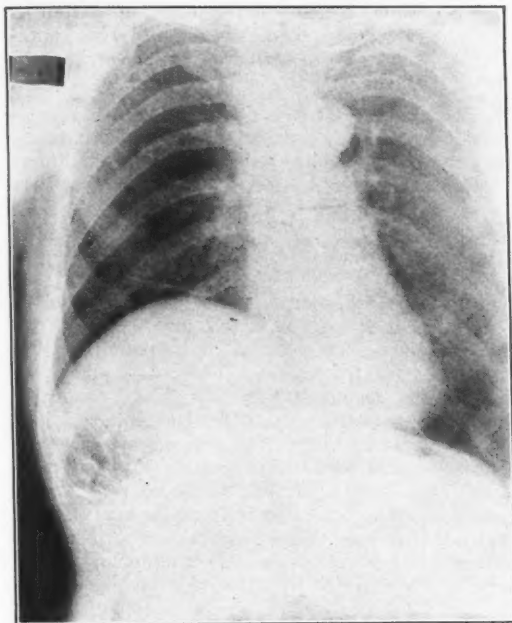


Fig. 3.—Case 3. Eventration of right diaphragm with the heart pushed to the left.

nance area there was a peculiar gurgle with each inspiration. There was tenderness over the sixth and seventh ribs in the anterior axillary line. In the epigastrium there was tenderness and a palpable gurgling sensation.

Fluoroscopy and roentgenogram of the chest showed the left lung lying compressed in the inner, upper fourth of the chest cavity (Figure 2). Below this level the left chest cavity was air-filled like a pneumothorax and separated from the compressed lung by a distinct somewhat irregular line. The heart was moderately displaced to the right. At the Latter Day Saints Hospital a barium meal was given and found to pass into a stomach lying largely in the left pleural cavity.

While in the hospital the clinical course remained unchanged. The patient had periods of dyspnea, palpitation, and pain in the left lower chest, all accentuated after eating. He left the hospital about three days later to go to the Mayo Clinic, where he was operated upon.

Doctor Harrington of the Mayo Clinic made the following report: "Because of the enormous size of the opening in the diaphragm, which upon x-ray examination appeared to be posterior, we first performed a left phrenic neurectomy paralyzing the diaphragm, intending to resuture the nerve after recovery. On November 12, we again operated upon him performing a left posterior extrapleural thoracoplasty, removing about four inches of the lower five ribs posteriorly, producing a partial collapse of the chest wall which would permit us to close the opening in the diaphragm. On November 16, through an abdominal incision, we attempted closure of the hernia. There was an enormous break in the diaphragm which had torn from the entire chest wall leaving a large oval rent. The entire stomach was in the left thorax, with only the pylorus extending through the opening in the diaphragm. The entire spleen, about one-half of the transverse colon, and the entire splenic flexure were also in the left thoracic cavity. After removal of these

organs from the left thorax the opening in the diaphragm was closed with interrupted sutures. We were able to obtain a very satisfactory closure of the opening by resuturing the diaphragm to the chest wall and, because of the preliminary paralyzing of the diaphragm and the thoracoplasty, were able to overlap the diaphragm onto the chest wall and resuture it for about three-fourths of an inch.

"He stood the operation very well although it was a very great risk. His immediate reaction was better than I anticipated, and his condition remained satisfactory for the first day. He then began to show signs of cyanosis with elevation of pulse rate and dyspnea. He was transferred to the oxygen chamber where he showed some improvement, but after twelve hours his condition became gradually worse and he died on the morning of the third day. On necropsy examination we found that he had pneumonia in the lower lobe of the right lung. The left lung was fully re-inflated and in good condition. The closure of the opening in the diaphragm was very satisfactory.

"As to the etiology of this case, it is possible that there may have been some congenital weakness in the usual areas of fusion of the diaphragm, but undoubtedly this was a primary traumatic type hernia."

**Diagnosis.**—Traumatic hernia or (evisceration) of the left diaphragm.

**CASE 3.**—The third case is that of a farmer seventy years of age. Family history unimportant. He was operated upon eight years ago for inguinal hernia. Chief complaint, pain in the right upper quadrant.

On November 11, 1927, he gave the following history: He was troubled with sour stomach ten to twelve years ago. He has taken soda for a year or two without relief. He has been free from symptoms until three months ago, when he began to suffer with gas pain. For years he has had an obstinate constipation. Lately he has taken all kinds of physic. Although the bowels move well he still has a feeling that the bowel is never empty. He has a persistent idea that there is some obstruction in the bowel. Lately he has been a little nauseated and has tried various diets in hope of relief. He finds he must take physic for relief.

Physical examination was not remarkable. The roentgenogram showed a persistently high diaphragm on the right at least six inches higher than on the left. This part of the diaphragm was immobile and pushed the heart to the left (Figure 3). Six weeks later the second roentgenogram was taken with exactly the same findings as in the previous examination.

**Diagnosis.**—Eventration of the right diaphragm.

#### COMMENT

The general use of the x-ray and the perfection of operative technique have brought the subject of diaphragmatic hernia prominently before



Fig. 4-a.—Nine mm. embryo stomach above the liver. After Prentiss and Arey.



Fig. 4-b.—Seventeen mm. embryo stomach below the liver.





Fig. 5.—Congenital hernia of the diaphragm. Dawes, *Surg., Gynec., Obst.*, October, 1918, p. 393.

the medical public. Since the diagnosis and treatment of this condition will be discussed by others, this paper will deal largely with the causes of the condition which is a subject of considerable interest.

The factors involved in the cause of these hernias are as different as are the hernias in type and location. It is interesting that only mammals should have a complete separation between pleural and abdominal cavities. Some of the lower animals have no partition and still others have a membranous partition, but this is situated anterior so that the lungs belong in the abdominal cavity. It is also worthy of note that diaphragmatic hernias do not have rings.

#### CLASSIFICATION OF HERNIAS

Diaphragmatic hernias may be arbitrarily divided into:

1. Congenital hernias.
  - (A) False hernias without a sac. (These constitute 80 to 90 per cent of reported cases.)
  - (B) True hernias with a sac. (These constitute 10 to 20 per cent of reported cases.)
2. Acquired.
  - (A) Hernias which develop through congenital weak areas in the diaphragm. These weak spots may be caused by:
    - (a) Defective development of the diaphragm.
    - (b) Pathological disease within the diaphragm itself or secondary to an abscess above or below the diaphragm.
    - (c) Blows which injure the musculature, the hernia occurring immediately or at a much later period.

(B) Blows which tear the diaphragm from its attachment to the chest wall. This condition is not a hernia but an evisceration or avulsion of the diaphragm.

3. Eventration. This is not hernia but a relaxation or weakness of one side of the diaphragm. Only ten cases have been reported in the literature, where this has occurred on the right side.

(A) Congenital.

(B) Acquired.

#### EMBRYOLOGY

In studying the development of the embryo we learn that the lungs, stomach, and liver are derived from an evagination and dilation of the upper part of the midgut. These first appear in the cervical region of the embryo and gradually wander downward to assume the adult position.

The diaphragm begins as a membranous organ in the cervical region and may be said to originate from three separate membranes: (1) Septum transverse that extends from the ventral wall backward beneath the pericardial sac to form the anterior and central parts. (2) The dorsal mesentery which extends forward from the posterior and central part, containing the esophagus. (3) The pleuroperitoneal membrane which gives rise to the posterolateral part. (4) Derivatives from the body wall. The adult diaphragm is a muscular structure, and its development takes place at a later date. The muscular elements begin at the periphery and grow between the leaves of the membranous structure centripetally. The tendinous portion originates, secondarily, from an atrophy of the central muscle fibers.

As the stomach develops downward or is pushed downward by the growing lungs, these membranes should fuse to separate the abdominal from the thoracic viscera. If the lungs fail to develop and the stomach remains high the diaphragm then fails to close or may even close below to make the stomach a thoracic organ, if some of the reported cases are authentic (Figure 4).

#### PROBABLE CAUSE OF HERNIA IN FIRST CASE

I believe that failure of the lungs to mature and push the stomach downward was primarily the cause of the abnormality in my first case. A cessation of the growth of the lungs is so frequently associated with this condition that this factor cannot be overlooked. It is also to be noted that cessation of growth of other organs such as cleft palate, patent ductus arteriosus, accessory lungs, and abnormal mesenteric relations of an atavistic nature might be factors in the development of this condition.

#### FORMATION OF SACS

In the congenital type where the abdominal organs have developed below the diaphragm and later return to the thoracic cavity through a congenital weakness in the diaphragm we would expect a sac to form and have a true hernia. If the hernia develops slowly a sac will form. If it occurs suddenly there will be no sac (Figure 6).

In not a few cases a pathological change in the musculature of the diaphragm may occur from

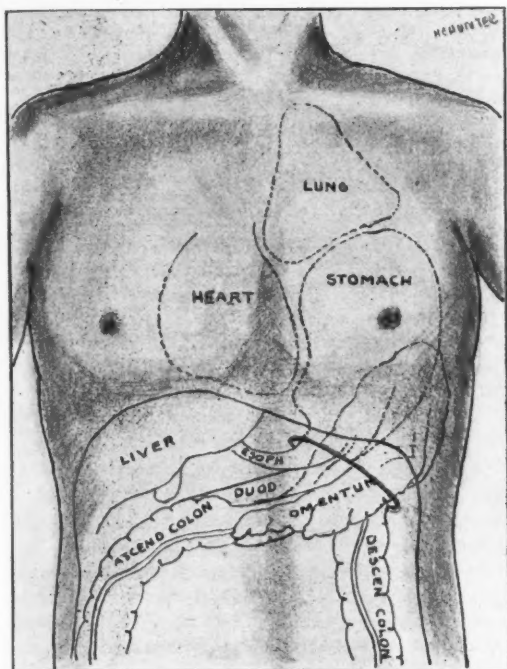


Fig. 6.—Acquired hernia of diaphragm. Scudder, Surg., Gynec., Obst., Vol. xv, p. 264.

disease or trauma, and years later the weakness may gradually give way and give rise to a definite hernia. It is this type of hernia that is most often met with in practice and which demands relief from an acute or chronic obstruction of the alimentary tract. The repair of the opening in the diaphragm may be done at this time or at a later date.

#### AVULSION OF DIAPHRAGM

The immediate cause of hernia in the second case is self-evident. From the long history of lung and stomach trouble with subsequent operations one would naturally surmise a weakness of the diaphragm or eventration preceding the final rupture. Doctor Harrington of the Mayo Clinic was not able to make this out at the time of operation. In any case a sudden increase in abdominal pressure if strong enough will naturally tear the diaphragm loose from its attachment. The finding of cases where such a tearing away of the diaphragm from the chest wall has occurred is rather uncommon, for these patients are most often killed by the blow.

Traumatic hernias following lesser violence usually develop in some of the weak spots of the diaphragm. They may give rise to immediate obstruction of the bowels or start a weak point that gradually enlarges so that the hernia is acquired or develops secondarily.

#### EVENTRATION OF DIAPHRAGM

Eventration may develop (a) from immature development of the lungs which naturally would leave the diaphragm high; (b) developmental injury to the phrenic nerve causing relaxation; or

(c) improper development of the musculature of the diaphragm. Such cases are often associated with other developmental defects, such as an unrotated stomach that interposes above the liver and below the diaphragm. Several cases have been reported where this has occurred. It may be acquired from pathological disease above, below, or in the diaphragm itself.

#### SUMMARY

1. Diaphragmatic hernia is much more common than it is thought to be and often overlooked by the physician or surgeon, the diagnosis being made by the roentgenologist or at autopsy.

2. It is most often congenital and may occur at the natural openings of the diaphragm or at weak spots in the diaphragm, due to either improper development of the musculature or failure of the stomach to descend and mechanically prevent fusion of the diaphragmatic segments.

3. Eventration is a congenital weakness of the diaphragm, and may be due to failure of the lung to develop properly and push the diaphragm down. Nonrotation of the stomach is frequently associated with this condition. It may also be acquired from degenerative changes in the musculature or injury to the phrenic nerve.

Inter-Mountain Clinic.

#### DISCUSSION

GEORGE W. MIDDLETON, M. D. (Inter-Mountain Clinic, Salt Lake City).—In the large industrial plants it often happens that parts of a machine are produced at stations some distance from the main center and, after they are finished, transported to the point of assembly to be built into the machine.

In the great human laboratory we observe the same principle. The gonad is produced up near to the kidney, and then transported downward to its proper position; the appendix is produced in the region of the spleen, and rotated around with the blind end of the great bowel to its proper position in the right lower quadrant; the central part of the diaphragm is produced in the upper thorax and drawn downward to fuse with the peripheral part and form the partition between thorax and abdomen.

In these organs, or parts of organs that are formed in one part and transported, there is always a tendency to abnormality in structure, size, or position; thus we have the small undescended testis, the post-cecal appendix, and the diaphragm that fails to fuse.

Congenital diaphragmatic hernia is always a developmental defect; acquired diaphragmatic hernia is a matter in most cases of rupture of the diaphragm through suddenly increased abdominal pressure.

Naturally the symptoms are either of the respiratory or the digestive systems, since these two great systems are always both involved.

On the respiratory side we may have cyanosis, dyspnea, and diminished vesicular breathing, according to the size of the hernia. If the herniated organ is full of gas there will be a tympanitic note on percussion; if it be full of fluid there will be a dull note. The heart is always pushed out of place, most often to the right, since these hernias are nearly all through the left diaphragm. From the digestive side the symptoms are of some degree of obstruction of the alimentary tube. These may be so mild in the lesser cases that there is little departure from the normal, or so violent in the graver cases that there is complete obstruction with all its attendant dangers. In the large hernias, the stomach, spleen, colon, small intestine, and sometimes the liver are pushed through. There will be the attendant pain and shock of torsion and pressure.

The x-ray has come to our aid in a wonderful way in making the diagnosis of diaphragmatic hernia. As



a matter of fact, before the aid of the x-ray came the cases were either found postmortem, or diagnosed in the operation for obstruction of the bowel.

Of course, the only curative treatment of this grave condition is surgical. With early diagnosis, and a chance for deliberate work, the mortality has gradually diminished.

The two lines of attack are from the abdominal and from the thoracic sides. Some of the more recent operators when necessary are combining the two. The French surgeons have held mostly to the thoracic route, while the Americans and English have rather favored the abdominal. Experience in the recent World War showed that one thoracic cavity can be opened with comparative impunity, provided the other one is intact and healthy. Some operators have done a preliminary resection of the phrenic nerve to paralyze the diaphragm; resuture of the nerve is done later to prevent eventration of that side of the diaphragm. From the abdominal side the best exposure is through a long transverse incision close to and parallel with the diaphragm; from the thoracic route a large flap door embracing all the thoracic structures is raised, and the hernia exposed and dealt with.

Truesdale of Fall River advises an incision beginning at the sixth rib in the axillary line, descending through the eighth and ninth ribs, thence being carried inward to the costal cartilages, and upward to the level of the starting point in the sixth rib. When necessary for reduction he carries the inner limb of this incision clear through the diaphragmatic attachment into the abdominal cavity, and thus combines the thoracic with the abdominal routes. After reducing the herniated structures, and disposing of the sac, when one is present, the diaphragm is firmly united with chromic sutures and the wound closed without drainage. Aspiration to free the cavity of fluids or air may be resorted to. This may also aid in the expansion of the lung. On the whole these cases today offer a much more hopeful aspect than formerly.

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JAMES P. KERBY, M.D. (Boston Building, Salt Lake City).—The use of the x-rays, as Doctor Hunter indicates, has increased greatly the number of cases reported. Before their discovery diaphragmatic hernia was very seldom diagnosed other than at the operative or postmortem table. It is my belief that many cases of slight hernia are unrecognized. More careful examination of our patients, especially in the horizontal and Trendelenberg positions, with particular reference to the natural openings and weak points, will reveal these often unrecognized cases. The occurrence of a small hernia at the esophageal opening is, I think, not infrequently overlooked.

As the essayist indicates, a few cases of congenital absence of the diaphragm have been noted. While some of these are probably authentic, I wonder if in those cases in which the diagnosis has been made, other than after a complete opening of the thoracic cavity, a condition similar to that described by Doctor Hunter in Case I did not exist, *i. e.*, at least a very rudimentary diaphragm. It is difficult for me to conceive, despite ability to accommodate to environment, of an individual carrying on an active athletic career, as did the patient mentioned in a recently written paper, without at least some restraint on the pressure of abdominal viscera on the heart.

I desire to corroborate from observation the desirability of the combined method of attack of this problem. There are few more formidable problems presented to the surgeon than this. Skill in judgment as to the best procedure, and dexterity in execution of the work planned are absolutely essential. In the few cases of this kind I have seen the combined abdomino-thoracic incision or, as in one case, two separate incisions, give sufficient exposure to enable the operators to suture the diaphragmatic rent and handle the thoracic and abdominal viscera without undue trauma.

## THE COMMONER SURGICAL DISEASES OF THE RECTUM, AND THEIR TREATMENT\*

By M. S. WOOLF, M.D.  
San Francisco

DISCUSSION by William H. Kiger, M.D., Los Angeles;  
Dudley Smith, M.D., San Francisco; Lloyd A. Clary,  
M.D., San Francisco.

AT the University of California we have had an opportunity during the past five years of segregating the treatment of diseases of the large bowel and of the anal canal. During this time many matters of significance have manifested themselves both in diagnosis and treatment which may be now suitably reviewed.

We shall omit any remarks on cancer of the colon and rectum except to state that this subject has recently been given suitable attention and that, for the present, little more is to be expected in the treatment of this serious problem. On the other hand, the treatment of fistula, especially the multiple type; of complete prolapse; of fissure and of other anorectal pathology is still unsatisfactory in many hands, but may be improved with a little closer attention to the anatomy and physiology of the part.

### THE ANAL CANAL

Inspection of the anal orifice reveals in the normal individual a rather tough, pigmented, regularly corrugated skin, the folds being arranged radially and regularly around the opening, which is firmly closed. Thus, the skin is normally redundant. These folds may be abnormally hypertrophied, usually in front or behind, and even a small amount of lining may present itself on their inner surface as a glistening mucous membrane. We then have a condition of external hemorrhoids, and it must always be remembered that these are skin with some lining.

The anal canal is from one to one and one-half inches long and when closed forms an antero-posterior slit. At the anterior and posterior limits of this slit-like aperture the skin may be redundant when we have the anterior and posterior sentinel external piles. The lower half-inch of the anus is lined by squamous epithelium, which has been formed from the embryological invagination of the surface dimple which forms the proctodeum. The upper half of the anal canal is lined by columnar epithelium. This upper portion has not the smooth lining of the lower, but is fluted longitudinally by about ten columns, which project forward. Joining the lower end of these columns are small pocket valves like the aortic valves on a small scale which may not only be cup-like, but also may have small sinuses, or

\* From the University of California Hospital.

\* Read before the General Surgery Section, California Medical Association, at its Fifty-Seventh Annual Session, April 30 to May 3, 1928.

crypts, running in an upward and inward direction. It may be noticed here that these are prone to retention and damage when they may give rise to a cryptitis or even a penetrating infection resulting in an abscess or fistula. The line, sometimes definitely visible where the upper and lower divisions of the anus meet, is termed the "white line of Hilton," and the columns those of Morgagni. The squamous lining is also marked by about four triangular papillae situated around the canal. These are always present, but may be hypertrophied even to the extent of forming polypi. Important in the injection treatment of hemorrhoids is the fact that the upper portion of the anus is, like the rectum, insensitive to painful stimuli.

In its middle half, the anal canal is surrounded and gripped by the external sphincter ani muscle, which is broader than it is thick, but its thickest portion is in the middle and then it tapers away both toward the anal orifice and toward the rectum. Above this muscle is the broad sheet of the levator ani muscle covered by pelvic fascia on both upper and lower aspects. It is pierced by the bowel with its own muscular coats. At the external sphincter the longitudinal muscular fibers become very attenuated, but what is left of them pass internal to the sphincter to be attached to the skin which it helps to pucker as a corrugator cutis muscle. The internal circular fibers of the rectum also extend to the skin internal to the external sphincter, but they increase in thickness so that it has been termed the internal sphincter muscle. It lies internal to the external sphincter, and hence its name. It is probably not a sphincter, but a detrusor muscle reflexly contracting immediately the fecal mass passes it. The two muscles having important sphincteric control are the levator ani which has a shutter action, and the external sphincter which has a diaphragmatic contraction. They both have a somatic nerve supply and are voluntary, while the internal sphincter, so-called, is involuntary in action and innervated by the sympathetic nervous system. The radicles of the veins and the terminal arteries are found in the cellular tissue between the muscles of the bowel and the mucous membrane.

#### SURGICAL LESIONS OF ANAL CANAL

**Hemorrhoids.**—The common surgical lesions found in the anal canal are hemorrhoids, fissures, abscesses, fistulae, and polypi.

It was formerly the custom to divide hemorrhoids into internal and external, and internal hemorrhoids again into arterial, venous, and capillary. A truer classification would be internal and external because only between these two is there any essential difference. The former are almost always venous in spite of the fact that an arteriole may occasionally show pulsation when ruptured or punctured and in spite of the capillary oozing which is seen in some hemorrhoids.

Internal hemorrhoids originate in the upper part of the anus and not in the lower. They will, therefore, always have their attachment above the anal papillae even if they prolapse externally, and

therefore they are insensitive to the puncture of a needle when injected. External hemorrhoids are mainly localized redundancies of the perianal skin, but they may evert or even cause a small prolapse of the lower anal mucosa so that in this latter case they might be termed intero-external. They are extremely well innervated and are sensitive to the prick of a needle. Often the veins of such a mucous membrane are damaged at stool and thrombosis occurs, giving the very painful thrombotic pile.

What is the place of injections in the treatment of hemorrhoids? I would say that this method is a valuable adjunct to surgical methods. I still have the personal preference of removing surgically all types of hemorrhoids if the patient is agreeable. Properly done, there is little danger of their returning, so that this method has the great advantage of certainty. However, if this cannot be done for personal reasons, or because of some medical contraindication against operation, certain types of internal hemorrhoids may be injected, but never the external. If the internal type are to be injected they must be accessible; that is, no painful fissure, or spasm of the sphincter, must be present. When a proctoscope, or preferably a circular Kelly anoscope of two inches is inserted, it should be withdrawn while the patient strains, so that the hemorrhoids, which are only an inch from the orifice, project in the speculum and gradually become distended. Then a hypodermic needle punctures sharply the most prominent part of the body of the pile and the injection is then made. The purpose of the injection made with a fibrosing chemical agent is to cause an aseptic thrombosis and inflammatory reaction which obliterates the veins and causes a shrinkage of the mass in general. But there is a limit to the shrinkage. This will indicate that hemorrhoids which regularly prolapse outside the orifice and do not immediately and easily return after defecation should not be treated in this manner. Bleeding may always be arrested by injections whether there is prolapse or not, but if the prolapse is constant and considerable, injections should not be attempted on account of the danger of rendering them irreducible because of edema and temporary swelling.

In an experience of several hundred injections, I can say that I have never seen a slough produced by the injections and only once have I caused any pain. There may be some transient discomfort and a feeling of fullness after the injection, but there should be no pain unless the anal mucosa below, or immediately at the papillae, has been injected. A great number of bleeding hemorrhoids, with or without mild prolapse, have been cured by injection treatment.

Remote emboli, or thrombosis, have never occurred in clinic or private practice. It is now a well-known fact which forms the basis of the injection treatment of varicose veins in the extremities that chemical injection of the veins produces a local adherent thrombus which does not separate as it may in a thrombophlebitis of toxic, or bacterial, origin. After both rectal and lower

limb injections, patients are ambulatory and about their usual duties immediately after treatment.

After giving trial to various substances, such as sodium salicylate, alcohol, protargol, silver nitrate, etc., I have come to the conclusion that phenol or urea and quinin hydrochlorid is the most useful and my personal preference is for phenol. I now use 20 per cent phenol, but in smaller doses than formerly with a 10 per cent solution. The phenol is a 20 per cent solution in glycerin and witch-hazel, the latter being a mild astringent to dilute the glycerin, which is not rapidly absorbed and is too thick of itself as a medium for the phenol. Three minims of this solution may be injected into each of three hemorrhoids at a sitting, and the treatment given every three or four days. As a rule, one injection will stop bleeding; four will cure the small hemorrhoids, and six the larger ones. For a mild prolapse, even more may be necessary.

External hemorrhoids cannot be injected by this method. Great pain and sloughing occur if this is attempted. These may easily be removed by the knife after injecting a few drops of novocain. It is often a difficult task in the surgical removal of internal hemorrhoids, complicated by external hemorrhoids, to demonstrate the line which separates skin from anal mucosa. This is partly due to the metaplasia which has occurred in the everted mucosa, giving it from exposure the character of true skin. It is more advisable to leave redundant skin than to remove too much around the anus, for this conduces to stricture at the orifice and it will be far better to remove any residual skin tags or external hemorrhoids some time later under a local anesthetic. Even if external redundant tissue is removed at the same time as large prolapsing internal hemorrhoids the part is so deformed when the latter are seized in the forceps that it is difficult to obtain what may be termed a good cosmetic result at one sitting.

**Fissures.**—Fissures occur both in children and in adults. In the former they are usually the result of an obstinate constipation alone whereby the hardened feces split the mucous membrane. They are usually amenable to stimulation by silver nitrate stick if the constipation is remedied. In adults, in addition to constipation, there is almost always an external hemorrhoid present and this is generally posterior, although it may be anterior. The fissure is longitudinal in the center of the pile, and is originally caused by the dragging on and splitting open of the lining of the hemorrhoid. It remains unhealed by being again wounded daily, as it were, so that the pile must be removed. Two other factors prevent healing: one is the reflex spasm of the external sphincter which is adjacent to or even invaded by the fissure, and the other is the lack of drainage owing to the cup-like retaining sentinel pile. Some divulse the sphincter, but I prefer myself to remove the pile, leaving a good draining area to the wound visible on the outside and incising through the whole muscle. A patient suffering from this intensely painful condition is extremely grateful for the

relief afforded by this means, and the drainage takes care of the rest. The sphincter heals without loss of continence which is not so certain when it is divulsed and perhaps split and damaged several times in its circumference which may happen if it is not to recover too soon and reproduce the spasm. The fissure should be packed twice daily with antiseptic gauze.

**Fistulae.**—Rectal fistulae arise from a variety of causes, both from some septic focus within or outside the rectum. An osteomyelitis of the sacrum; tuberculosis of the hip-joint; and pelvic suppuration may form channels into the rectum and externally, but these are not the common causes of fistulae as we see them. The latter arise in the rectum itself and usually near the junction of the two divisions of the anus, which appears to be the critical, or weak portion, of the lower part of the bowel. Many fistulae are preceded by an abscess which may point within the lower rectum or in the buttock near the anus. This is not always the case. The fistula found in those, usually younger individuals, with frank pulmonary tuberculosis whether it be a definite microscopic tuberculous lesion, or a pyogenic lesion in a tuberculous subject, is often a fistula from the beginning without a collection of pus heralding its onset. The intrarectal cause of fistula is damage to the mucosa and a subsequent invasion of the deeper structures without adequate drainage. Thus the ultimate result is a perforation of the skin of the buttock, if, indeed, this is not made surgically for the relief of an abscess.

**Abscesses.**—Abscesses may occur beneath the mucous membrane, usually near the anus but sometimes higher up. These are, therefore, superficial, and an adequate incision into the abscess will suffice to cause a permanent healing of the abscess. Otherwise the abscess will be outside the rectal wall and then it will lie above or below the levator ani muscle. This muscle, as mentioned above, is covered with pelvic fascia on its abdominal surface and above this is covered by peritoneum. An abscess above the peritoneum is pelvic and is commonly drained in women through the posterior vaginal fornix. In men it should be drained through the rectum if it points in this position. In other cases it is suitable to drain it above Poupart's ligament. The abscess may lie between the peritoneum and the levator ani muscle when it is a pelvirectal abscess, which at first points in the rectum and should be approached from this structure. But it may have ruptured through the levator ani muscle and then come to appear as if it were a primary ischio-rectal abscess, which takes a position below the levator ani muscle and points in the buttock rather than in the rectum. The primary ischio-rectal abscess should be opened through the buttock.

A careful digital examination and a knowledge of the anorectal region will give excellent information on the position of an abscess. Should this be draining into the rectum by an obvious flow of pus, this opening must be considerably enlarged



and packed for a few days when in the majority of cases the patient will be permanently relieved and cured. An external opening, should it be necessary, most often means a residual fistula.

It will be seen, therefore, that by no means all ischioirectal abscesses should be evacuated from the surface of the body. If it is deemed advisable to make an external incision, owing to the position of the abscess, such an incision must be a crucial one, each cut extending to the limits of the abscess cavity. In essence, an attempt should be made to form a saucer-shaped wound, comparatively shallow, and for this purpose skin should be removed so that the bottom of the cavity is seen and daily packed.

A fistula and not a sinus usually results from an abscess, although the internal opening may not be seen or discovered, and it might be remembered that external fistulous openings run into the rectum in front or behind according as they are anterior or posterior, respectively, to a line drawn horizontally through the center of the anus. In endeavoring to trace at operation such a tract, which is probably tortuous, it is far better to rely on the naked-eye appearance of diseased tissue, which is very obviously different from the surrounding normal tissue. Dyes injected, stain normal tissue as manipulation of the channel proceeds, obscuring the main and subsidiary tracts.

From what has been said of the anatomy of the sphincters, it will be seen that the answer to the question, "Will there be incontinence if the sphincters are cut across?" does not depend on the internal sphincter. We know that the external sphincter may on one occasion be severed cleanly in dealing with fistula and, owing to the internal being within and adjacent to the external sphincter, it must be severed with the latter. Undoubtedly incontinence results if the external sphincter is cut across obliquely so that the fibers do not join each to each, as it were, but the internal sphincter is not responsible. Rather it is the transverse incision of the levator ani where it slings up the rectum together with an irregular wound of the external sphincter in a pelvirectal abscess which may give this serious result. This may be avoided in a way I shall presently indicate.

The reasons for persistence of a fistula are an opening in the rectum discharging bacteria into the channel and infecting the granulating tissue and subsequently fibrosis of the area around the granulation tissue forming in late stages an almost cartilaginous thickening. The cause of failure to cure a fistula is mainly some unrecognized portion of the tract or branches of this tract.

I would give the following as a working rule in the treatment of fistulae. If the internal opening is below or at the insertion of the levator ani muscle, a director should be made to reach this opening by inserting it into the external orifice and then cutting upon it as it successively seeks the dark and flabby granulation tissue occupying the tract. The point of the director will then appear in the rectum when the director may be curved and be brought out at the orifice, all intervening tissue between it and the two orifices being

slit open on the director. This wound should then be well packed and the skin adjacent removed so that a wide gaping wound is formed which subsequently is packed twice daily with antiseptic gauze.

It is fortunate that most fistulae have an internal opening below the levator ani so that, though the sphincters are cut through, no incontinence results from the operation.

Two other types of fistula remain to be discussed: one in which there is an opening above the levator ani and the other, multiple fistulae. In the former, I prefer to make a saucer-shaped wound from the outside, enclosing in it the fistulous tract right up to the wall of the rectum. Then the mucous membrane is dissected from the orifice, as in a Whitehead operation for hemorrhoids, until the upper limit of the internal opening has been passed. The mucous membrane is then drawn down and stitched to the anal skin so that a tube of mucous membrane may be removed which includes the fistulous opening. In this way an intact lining is left and the wound from which the tract has been excised is left to heal without further infection from within the rectum and incontinence is not risked.

Multiple fistulae, that is, those with many external and sometimes with one or several internal openings can be cured with care and by radical incisions. The plan is to convert a multiple fistula into a simple one. When one external opening is followed, it will often be found in some part of its tract to meet the tract from another opening. These two, or more than two, must be connected together by a radical saucer-shaped wound which, upon healing, will leave but one external opening. If other external openings remain, the one resulting from the above procedure and these may similarly be united by following their tracts to a common meeting place. Finally, one has either two external openings with individual connections into the rectum or only one. In the first case the one fistula is slit up into the rectum and later on after healing of this, the second fistula is dealt with. If there is only one rectal opening the two external openings are first connected by this incision following their channels to the point at which they meet and then the common tract is opened into the rectum and the wound packed.

*Polypi.*—Polypi in the rectum are of two varieties—fibrous and adenomatous. The former are produced by some irritation in the upper part of the anal canal, whether this be due to infections and their discharge or to vascular stasis. They therefore accompany ulceration above or near this level, and their presence in the vicinity of hemorrhoids occurs without gross infection. They may also result in the degeneration of hemorrhoids and in the enlargement of anal papillae. I have seen the extremities of hemorrhoids drawn out into small polypi when the normal papillae were present at the same time, so that the polypi were not merely papillae encroached upon by the hemorrhoids. These fibrous polypi are covered by epithelium and have a fibrous stroma in which runs a central attenuated vessel. They usually remain innocent, but the view must be taken that any

excrecence of this kind covered by mucous membrane may become malignant by the constant irritation and passage of infected feces. The single adenomatous polyp occurs in children and is congenital, arising from remnants of the neurenteric canal. It is found on the posterior wall of the rectum. It tends to prolapse like a dark raspberry outside the anus, and is often mistaken by parents for hemorrhoids. It is easily removed by ligature and excision. Multiple polypi occur in both young adults and old people—more often in the former. They have a glandular structure like the infantile single type and are true adenomata. They may occur in hundreds from the rectum to the cecum, when they produce a discomfort in the colon not unlike that in diverticulitis, but accompanied by bleeding and diarrhea rather than constipation. They are of great significance since they are considered a precancerous lesion, and it is possible to demonstrate in some cases these or their small beginnings near cancerous growths, especially if these are multiple. So great is the probability of these polypi becoming malignant that the bowel containing them should be removed; that is, a colectomy is advisable if they are found throughout the colon. If they occupy the rectum alone and are accessible to manipulation, they should be cauterized away one by one.

I have endeavored to present to you certain facts concerning the more common surgical lesions of the rectum and anus as we see them, each represented by fair numbers. It may be that occasionally the treatment of these conditions is somewhat dogmatically stated, but one must have a working plan according to the results of one's experience, and this is what I hope I have clearly brought before you.

384 Post Street.

#### DISCUSSION

**WILLIAM H. KIGER, M.D.** (523 West Sixth Street, Los Angeles).—Doctor Woolf has given you a very thorough review of the anatomy of the rectum, and has presented the more common surgical lesions in a very clear manner. He has also stressed the importance of a thorough and careful rectal examination in all cases where blood is seen in the stool.

Regarding the treatment of hemorrhoids by injection. This is an excellent procedure in selected cases. I believe that about 50 per cent of the hemorrhoid cases are suitable for this method of treatment. Personally I prefer the quinin and urea method as advocated by Doctor Terrell.

There is another point that should be stressed, and that is, the effect of lesions in the anal canal on the entire digestive tract. You might just as well expect to have a good sewerage system with the outlet stopped up as to expect the bowel to function properly with its outlet not working properly. The rectum may be plugged by large hemorrhoids that have to be forced out of the way before anything can pass, or there may be an irritable ulcer or fissure that causes the muscle to be in constant spasm. When such conditions are found, you will be surprised at the number of cases that will clear up if the rectal condition is corrected. If these points are considered you will save many patients the trouble and expense of a complete gastro-intestinal study.

**DUDLEY SMITH, M.D.** (909 Hyde Street, San Francisco).—Accurate diagnosis and correct treatment of the commoner diseases of the rectum is so uncommon

that Doctor Woolf should be commended for again bringing the subject to the attention of the profession. Accurate diagnosis depends upon careful examination and, of course, correct treatment depends upon accurate diagnosis. Although the technique of examination is easily acquired comparatively few doctors have made themselves familiar with it, and therefore much disease in this region is overlooked. It cannot be too often emphasized that disease in the rectum may progress to an astonishing degree without symptoms and that polypi are definitely precancerous lesions. If polypi and other lesions are discovered early and removed, many cases of cancer will be prevented. Symptoms of cancer of the rectum rarely arise until the lesion has been present for months. Gradually increasing constipation is sometimes a fairly early symptom when the growth is at the rectosigmoid junction. Bleeding is a comparatively late sign and should always demand complete proctoscopic examination. If the source is not then discovered, barium enema and the x-ray should be used. Moreover the existence of hemorrhoids or other lesion in the anal or ampullar region should not be regularly considered the source of the bleeding, but search should always be made for any possible lesion higher up.

Many cases of chronic constipation are due to causes that may be discovered by careful rectal examination, and yet it is common practice to treat constipation without examination. In no other region of the body is this neglect so frequent. No case of chronic constipation ought ever to be treated without first correcting or ruling out local causes.

Doctor Woolf is entirely right in frowning upon divulsion of the sphincter in anal fissure and ulcer, but in my experience much more rapid healing has been secured, and with the avoidance of much unnecessary pain, when the wound has not been packed with gauze after excision. The same is true regarding the packing of wounds after fistulectomy. After the first dressing is removed the wound should not be packed. A vaselined applicator should be passed through the wound daily to prevent bridging, and this occasions very little pain. My patients have liked me better since I stopped packing these wounds with gauze.

✱

**LLOYD A. CLARY, M.D.** (1195 Bush Street, San Francisco).—Doctor Woolf treats a wide subject in a short space. Two of the very common anal conditions he mentions, cryptitis and papillitis, but does not give treatment. Infected crypts can be excised in the office under local anesthesia quite easily. Enlarged, inflamed papillae, the cause of spasticity of the sphincter so frequently, can be removed in like manner.

I agree that incision of a fissure through the muscle is vastly preferable to divulsion.

In the treatment of fistulae, whether single or multiple tracts, I much prefer excision of the entire diseased area at one sitting. The use of the Percy cautery in this condition has been highly satisfactory to me. I am radical as to excision of fistulae and not backward in sacrificing tissue. Healing is surprisingly fast, with little scar tissue resulting.

Polypi in the rectum above the anal canal may be destroyed easily by fulguration, without pain, as the urologist destroys bladder polypi. If in the anal canal they can be removed in the office with an office cautery after injecting base with local anesthetic. The cautery makes this practically a bloodless procedure.

Doctor Woolf is right in having a working plan. However, I do not recall seeing two cases, even of hemorrhoids, exactly alike. There are variations in treatment that must be applied in practice. We are too prone to speak of the "treatment of hemorrhoids," for example, as an entity. Our object should be to clear up the rectal condition completely if possible.

Doctor Smith mentions rectal conditions as a cause of constipation. I am heartily in accord. No prescription should be given, no treatment instituted, for con-



stipation without first examining the rectum. One of the most valuable operations I know of is a posterior proctotomy to enlarge a small anal canal. It is astonishing how many cases of constipation can be cured by this procedure. I believe that fully 25 per cent of constipation cases have a rectal cause.

Agreeing with Doctor Kiger's statements regarding rectal causes of intestinal disorders I would stress rectal examination in all cases of constipation, flatulence or obscure intestinal disorder. Many functional colonic troubles with attendant pain and discomfort vanish after some anal pathological condition is corrected. It is foolish to fill the intestinal tract with bismuth before this examination is made. It may take a week before the bismuth can be cleaned out sufficiently so that such an examination can be made. Examine the rectum *first*.

✱

DOCTOR WOOLF (closing).—The more I am engaged in the practice of surgery of the rectum the more I am impressed with its importance. The rectum is often casually dismissed from a general and otherwise comprehensive examination so that an ulcer, a polyp, or a malignant growth may be left undiagnosed. The examination of the rectum both digitally and instrumentally, as Doctor Smith says, is a simple procedure. On the contrary, some of the surgery which has been thought to be of a minor nature, such as the operations for hemorrhoids or fistula, may often require the most expert attention, and the surgical treatment of multiple fistulae may be classed under major surgery. The fistulae I referred to as requiring several stages, before final and complete healing was obtained, were those with many external and perhaps several internal openings, the so-called "watering-pot" variety. I think Doctor Clary would not care to excise the whole area of such fistulous tracts at one operation, since one would have to excise half the buttocks and part of the rectal wall.

### RATTLESNAKE BITE\*

By J. FRANK DOUGHTY, M.D.

Tracy

DISCUSSION by Miley B. Wesson, M.D., San Francisco; John J. Sippy, M.D., Stockton; Herbert Gunn, M.D., San Francisco.

HIKING and camping have become so universal since the popular use of the automobile that the hazard of snake bite has become increasingly frequent. Rattlesnakes are widely distributed throughout the United States, and may be encountered by the individual who is out-of-doors in pursuit of his occupation or recreation.

Due to the rarity of reports of fatal cases from rattlesnake bite in the medical literature, the current opinion has developed that death from this cause does not occur. Wilson,<sup>1</sup> from 566 cases of snake bite, isolated 408 of the rattlesnake and tabulated twelve which were fatal. Nineteen fatal cases reported in the literature have been collected in this investigation.

#### REPORT OF TWO FATAL CASES

CASE 1.—A three-year-old boy was bitten three times in the left leg by a rattlesnake (Fig. 1) of the species *Crotalus oreganus*, February 28, 1927. Within a few minutes the father ligated the leg above the wound and brought the boy seven miles to my office. This required about half an hour. The largest of the wounds was sucked continuously during this time.

The patient's face was flushed, but soon became pale, and a cold sweat appeared. There were a few



Fig. 1.—A photograph of the snake which bit the patient in Case 1.

muscular twitchings of the face. The pupils were contracted. The patient was conscious, but had periods of lethargy followed by excitement.

The leg below the ligature was swollen and ecchymotic around the whole anterolateral aspect, but especially purple around the larger bite. There were three pairs of puncture wounds on the anterior aspect of the leg, the highest about two inches below the knee (Fig. 2). This wound was large enough to appear as two small lacerations each about .2 cm. long and 1 cm. apart, and they were bleeding freely. The other two wounds were apparently superficial and did not bleed very much.

The ligature was left in place and all three wounds deeply opened by a cross-incision and undercutting of the edges. Crystals of potassium permanganate were then applied and carried into every recess of the wound by the knife. Later the ligature was released intermittently and left off entirely at the end of two hours. The only antivenom available was that of the Pasteur Institute, for European pit vipers. This was ordered immediately and 10 cc. was administered as soon as received, which was six hours later. One grain of caffein sodium benzoate was given hypodermically every half hour.

The patient became progressively weaker, the extremities becoming cold, the respiration more rapid, and the coma more profound but punctuated by lucid intervals. The respiration finally became of the Cheyne-Stokes type and failed entirely twelve hours after the bites were received. The pulse was palpable several minutes after the complete cessation of respiration.

At the time of death the whole lower extremity from foot to hip was immensely swollen and ecchymotic.

CASE 2.\*—March 18, 1928, a twenty-year-old girl was bitten on the dorsum of the right foot by a rattlesnake. An improvised ligature was applied above the wound, and she was seen by a physician about an hour and a half later. The foot and leg were considerably swollen and the foot was dark in color. The heart action was good. An incision was made through each fang wound and considerable discolored blood



Fig. 2.—Drawing of leg of three-year-old patient in Case 1, showing immense swelling and the ecchymosis around the largest of the three bites.

\*Read before the General Medicine Section, California Medical Association, at its Fifty-Seventh Annual Session, April 30 to May 3, 1928.

\*This case is reported through the courtesy of Dr. S. W. Cartwright of San Andreas, and Dr. R. L. Owen of Lodi, California.

escaped. The patient was then carried down the mountain and arrived at the hospital about two and a half hours after she was bitten. Ten cubic centimeters of antivenin were given subcutaneously, and the ligature was intermittently released and then removed. She remained in good condition and, after an hour's observation, was allowed to be taken home in an automobile, a distance of about fifty miles.

She arrived home about five hours after the bite was received and was immediately placed under the care of a physician. At this time she was greatly excited. Her respirations were 28 per minute and pulse 95, full and regular. The right foot and leg to the knee were greatly swollen and purplish in color. The leg was hyperesthetic. The patient complained of excessive thirst and abdominal cramps. There was a slight twitching of the abdominal muscles visible at times.

The leg was lowered, another incision was made and hot applications maintained. Fluids were administered freely. The patient became quiet and went to sleep. The color of the leg gradually improved. About 10 p. m., eight hours after the accident, the patient vomited and complained of severe abdominal cramps. She was very pale and somewhat cyanotic; respirations 35 per minute, and pulse 125. There was a numbness creeping upward from her feet to her trunk. At this time the right leg was anesthetic to a point about six inches above the knee and was again immensely swollen and purplish.

The general condition of the patient grew gradually worse. The pulse rate became more rapid and the skin anesthesia more generalized. Adrenalin, camphorated oil, and caffeine sodium benzoate were given hypodermically, but the patient continued to sink and died about seventeen hours after the bite. She remained mentally clear until five minutes before death. (Table I.)

#### MECHANISM OF THE BITE

The fangs which are appended to the anterior part of the maxilla have a perfect canal through which the poison is ejected from the poison gland by muscle fibers connected with the fibrous capsule of the gland. The gland is placed in such a manner that when these muscles contract in the act of biting, the poison is synergically ejected. The fangs in the snake causing the accident in Case 1 (Fig. 1) were three-fourths inch long when passively exposed. A snake bite is analogous to a hypodermic injection capable of penetrating the length of the fang. The poison may be injected subcutaneously, intramuscularly, or intravenously.

#### THE PHYSIOLOGICAL ACTION OF VENOM

The physiological action of rattlesnake venom has been classified as: (1) neurotoxic; (2) agglutinant and hemocytolytic;<sup>13</sup> (3) cytolytic; (4) thrombopoietic; (5) antibactericidal.<sup>9</sup>

#### PREVENTION

Leather shoes and puttees worn when in a snake-infested area will prevent a large percentage of snake bites, as most bites occur on the lower extremities.

#### NONSPECIFIC METHODS OF TREATMENT

1. Methods which attempt to withdraw the poison from the part, usually by cupping or suck-

ing. Obviously this is inefficient because of the great affinity of the venom for cells and the rapidity with which it is fixed.<sup>10</sup>

2. Ligation above the bite, thus impeding the penetration of the poison into the blood. This does not prevent the spreading of the poison by infiltration and contiguity of tissue, but it is a temporary and valuable first-aid measure.

3. Efforts to destroy the poison *in situ*: The principal agents used for this purpose have been potassium permanganate, chromic acid, gold chlorid, and chlorin compounds. Even if these substances completely destroyed the venom, which they do not, the rapid absorption of the venom makes their use very limited.<sup>10</sup>

#### SPECIFIC THERAPY

Snake antitoxin was first produced by Calmette in 1894 by injection of venom into the horse.<sup>11</sup> Numerous other investigators have produced specific antivenomous serums. One of the leading investigators in the United States at this time is Afriano do Amaral. In other countries numerous institutes produce the antivenom in quantity, and it has proven of great value.<sup>9</sup> To be effective it must be produced by an animal immunized to the poison of the *species* of snake causing the accident.

Until recently the serum has been produced in such small quantities and was kept so far removed from the scene of the accident that administration early enough to be effective was impossible.

The effectiveness of the serum depends upon (1) the specificity for the species; (2) early administration; (3) adequate dosage.

#### PROGNOSIS

The prognosis depends upon: (1) The toxicity of the venom. (2) The relation existing between the quantity of poison injected and the size and resistance of the individual.<sup>12</sup> (3) The early administration of the specific antivenom in adequate dosage.

#### SUMMARY

Two fatal cases of rattlesnake bite are reported. Case 1 did not receive the specific antivenom. Case 2 received the specific antivenom, but the dosage was not given in sufficient amount. Antivenom in inadequate dosage is not curative any more than is diphtheria antitoxin in too small amount. As in the administration of any antitoxin the adequacy of the dosage is determined by the response of the patient. The dose should be repeated if the patient is not improved in three to five hours.

#### CONCLUSIONS

1. Local treatment is inefficient, but ligation is a valuable first-aid measure.  
2. Mortality up to the present time has de-

TABLE 1.—A Tabulation of Nineteen Fatal Cases of Rattlesnake Bite Collected from the Literature

| REPORTER                       | CASE                | WOUND       | DURATION   | LOCAL SYMPTOMS                                    | CONSTITUTIONAL SYMPTOMS   | TREATMENT  | POSTMORTEM AND REMARKS   |
|--------------------------------|---------------------|-------------|------------|---|---|--|--|
| 1. Phorell <sup>1</sup>        | Male 50 years old   | Hand        | 9 hours    | Swelling<br>eczymosis<br>pain                     | Prostration, rapid and weak pulse, dysphagia, dyspnea, contracted pupils, mind clear.   | Prompt ligation cauterized in 18 minutes, olive oil, leeches.  | Fluid in cerebral sinuses, blood in bitten arm coagulated, trachea and lungs congested, death 9½ hours after bite.   |
| 2. Horner <sup>1</sup>         | Adult male          | Elbow       | 18 hours   | Swelling<br>eczymosis<br>pain                     | Vomiting, fecal incontinence, abdominal pain, one convulsion, great prostration.  | Local blood-letting, ammonia, oil.   | Serous exudate beneath cerebral arachnoid, serous exudate in arachnoid, liver enlarged, local infiltrations. Patient intoxicated when bitten.  |
| 3. Clarke <sup>1</sup>         | Male 50 years old   | Hand        | 24 hours   | Swelling<br>eczymosis<br>pain                     | Weak pulse, dyspnea, dysphagia, numbness, tremor, convulsions, twitching right thumb and left leg, epistaxis.   | None.  |  |
| 4. Post <sup>1</sup>           | Male 40 years old   | Finger      | 5 hours    | Swelling<br>eczymosis<br>blood spurted            | 3rd hour coma, pulse absent   | Prompt suction, excision in ¼ hour, cautery, ligation, brandy, ammon. carb.  | Death 5 hours.   |
| 5. Alexander <sup>1</sup>      | Child               | Heel        | 18 hours   | Twitching   | Fatal collapse after removal of ligation, 16 hours after bite.  | Ligation, whiskey.   | 16 hours after bite, death occurred.   |
| 6. Shapleigh <sup>1</sup>      | Adult male          | Finger      | 40 minutes |   | Excitement, coma, dyspnea   | Nitric acid in 2 minutes after bite. Incision, ligation in 20 min. alcohol.  |  |
| 7. Rivers <sup>1</sup>         | Male 7 years old    | Arm         | 3 hours    |   | Vomiting, restlessness, coma, muscle spasm, leg.  |  |  |
| 8. Comfort <sup>1</sup>        | Male 8 years old    | Hand        | 17 hours   | Gangrene<br>swelling<br>eczymosis<br>pain         | In 4 hours, prostration, delirium, blindness, fever, convulsions, 98°; vomiting, diarrhea, frequent urination, paresis both arms, pain, convulsions.                | Prompt ligation, whiskey, ammonia, ligation loosened in 7 hours.   |  |
| 9. Spaulding <sup>1</sup>      | Adult male          | Hand        | 27 hours   | Gangrene<br>swelling<br>eczymosis<br>pain         | Syncope, restlessness, vomiting, dyspnea, fecal incontinence, bloody stools, dilated pupils, weak pulse, marked prostration, heart failed first.                    | Incision, whiskey.   | Congestion brain and meninges, lungs, 1 oz. blood in each pleural cavity. Stomach congested, contained blood. Extravasation in arm and right side to groin. Death fifth day: sepsis. |
| 10. Brewer <sup>1</sup>        | 7 years old         | Finger      |            | Gangrene<br>swelling<br>eczymosis<br>bleb         | By days: first, twitching, dyspnea; second, delirium, trismus, high arterial tension, fever, pain; third, better; fourth, fall temp., swelling spreading over body. | Prompt ligation, excision, whiskey, strychnin.   |  |
| 11. Crouse <sup>1</sup>        | 5 years old         | Hand        | 6¼ hours   |   | Prostration, dyspnea, pulse 162, rales in lungs, pupils contracted, vomiting, retention of urine, convulsions, temp. 97°. Collapse after removal of lig.            | Ligation in 20 minutes, potassium permanganate, strychnin.   |  |
| 12. Lewis <sup>1</sup>         | Male 14 years old   | Leg         | 6 hours    | Gangrene<br>swelling<br>eczymosis<br>pain<br>bleb | Rapid, weak pulse, vomiting, dyspnea, diarrhea, cold skin.  | Prompt ligation, suction carbolic dressing, strychnin, adrenalin, ammonia, white arsenic, strychnin, potassium permanganate. |  |
| 13. Crutcher <sup>2</sup>      | 7 years old         | Arm         | 5½ hours   | Swelling,<br>vesicles                             |   |  | Death 18 hours.  |
| 14. Compton <sup>3</sup>       | Adult female        | Arm         |            | Swelling  | "Usual antidotes."  |  | Death 18 hours; intoxicated when bitten.   |
| 15. Driver <sup>4</sup>        | Female 12 years old | Leg 2 bites | 1½ hours   | Swelling to groin,<br>pain,eczymosis              | Excitement, redness of eyes, prostration, vomiting.   | Onion poultice, ligation, whiskey, incision, bichlorid, potassium permanganate, iodoform, strychnin, whiskey.                | Respiration failed first.  |
| 16. Thomas <sup>5</sup>        | Male 5 years old    | Foot        |            | Swelling to groin,<br>pain,eczymosis              | Cold skin, dyspnea.   |  | Died in 10 minutes.  |
| 17. Blackwood <sup>6</sup>     | Male 36 years old   |             |            |   |   |  |  |
| 18. Daggette <sup>7</sup> 1917 | Adult male          | Hand        |            | Swelling<br>eczymosis<br>pain                     | Hemoptysis, hematuria, vomiting, tremor, weak pulse.  | Ligation, potassium permanganate injected, saline and adrenalin intravenously, a serum 12 hours after bite.                  |  |
| 19. Home <sup>8</sup>          | Adult male          |             |            |   | Cardiovascular depression, vomiting.  | Potassium permanganate, caustics, ligation.  | Died seventeenth day.  |



pended largely upon the relative amount of venom injected by the snake's bite.

### 3. There is a specific antivenom.

231 West Eleventh Street.

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#### DISCUSSION

MILEY B. WESSON, M.D. (1275 Flood Building, San Francisco).—Doctor Doughty's paper, which is almost classical in its brevity and completeness, emphasizes three points: (1) rattlesnakes are common in California; (2) rattlesnake bites cause death in both children and adults; and (3) antivenin will not prevent death unless the dosage is adequate.

There is a certain amount of mystery and glamour about rattlesnakes, and most doctors, as well as laymen, are in doubt as to how poisonous they really are. In the old days every side-show had at its entrance a box of rattlesnakes, and a Gila monster in a glass case, and the barker loudly informed the public that this reptile was so venomous that even its breath was a deadly poison. I have never yet been able to find out whether or not a Gila monster's bite is dangerous. At rare intervals articles have appeared in the newspapers reporting deaths following such, and each time I have written to the county health officer, only to find that there was no record of such bite or death. There are undoubtedly doctors who do not know that a rattlesnake bite is fatal to an adult. Doctor Doughty has corrected that error.

When a student in zoology I had the privilege of dissecting a rattlesnake head that measured about three inches in diameter, and there I found twenty-eight sets of fangs, so he had plenty of spare ones to replace any that might be torn out. In addition to the poison fangs there is a row of curved teeth, and the large snakes can bite as severely as a dog. The fang is hollow like a hypodermic needle, and the mature ones set on a tilting base so that they can be pushed forward and backward. When at rest the fangs lie against the roof and are buried in the mucous mem-

brane, just as the blade of a pocket knife is closed into the handle. When preparing for action the sphenopterygoid muscle contracts and pulls forward the all-important quadrate bone, thereby imparting the motion to the external pterygoid, and in turn to the superior maxillary, thus pushing forward the fangs. After the strike the process is reversed, and the bone tilts the opposite direction so as to assist in holding and burying the fangs deep in the object while the poison is being injected.

The poison glands occupy the general position of the parotid glands in a human being, but are covered by the temporal and external pterygoid muscles, and the contraction of these compress the sacs and squeeze out their contents. The poison duct does not connect directly with the fang, but empties into a small open space on the opposite side of which is the hollow tooth. When a fang is torn out a second one slips into place, just as by merely moving the turntable in a roundhouse a connection for an engine is made directly with the main track.

Those who handle rattlesnakes with impunity not only slit the poison sacs and swab them out frequently with hydrogen peroxide or some similar preparation, but also keep the fangs torn out. This is done simply by flipping a silk handkerchief at a snake's head. When he has struck and entangled his fangs, the handkerchief is jerked away and the fangs are torn out. This should be repeated daily, for though some believe that it takes at least one week for new fangs to develop, or for a new supply of poison to be generated, there is always the danger of having a precocious reptile to handle. Taking such chances results in "accidents," for although the Hopi Indians usually handle rattlesnakes with impunity, and snake charmers are often bitten by rattlesnakes with no untoward results, yet deaths among them occasionally do occur.

Antivenin is a polyvalent serum and is a remedy for the venom of North American rattlesnakes, moccasins and copperheads. A 10 cc. dose is ordinarily efficacious, but if the patient still shows any bad effects a few hours after it has been administered the dose should be repeated. No one in this day expects to cure diphtheria with one injection of 500 units of antitoxin, then why expect to cure snake-bite with one 10 cc. dose of antivenin.

✱

JOHN J. SIPPY, M.D. (San Joaquin Local Health Center, Stockton).—It is probable that the failure of some patients to react to antivenin is due to insufficient dosage, and we shall have to learn, as we have in the use of antidiabetic serum, that the size of the dose will have to be gauged by the promptness of administration, that is, with every hour of delay the dose must be increased.

Physicians have a duty in this subject, not only to inform themselves, but also to see that the public has accurate and sane knowledge. Prevention is more important than treatment, and the public needs to be taught something of snake habits and periods of virulence, avoidance of snake haunts, and proper clothing protection. Woodsmen and workers on snake farms, for instance, while they learn instinctive vigilance, depend largely upon knee-high boots, or leather leggings, for snakes, under usual circumstances do not strike higher than the knee. Personally, I am wondering that if, as a public health official, I had manifested the same interest in the subject as Doctor Doughty and passed on his knowledge to the public, one of the two deaths which have occurred in San Joaquin County in the past year might not have been avoided.

✱

HERBERT GUNN, M.D. (350 Post Street, San Francisco).—Doctor Doughty's article is a very interesting and comprehensive discussion of rattlesnake bites.

This is a particularly interesting subject to most Californians because at one time or another nearly all of us go out into the country, and rattlesnakes are more or less prevalent all over the state. One

point that was particularly impressed upon me was the necessity of having antivenin serum available for use of those who may be injured. This is especially important in view of the fact that the serum is extremely expensive and for this reason will not be generally carried by campers and hikers. A supply should be on hand at certain definite points, and the location of these points should be widely advertised. County seats if supplied could be reached from most points within a few hours. Better still would be judiciously stocking the forest rangers so that inquiry from any ranger would immediately locate the whereabouts of a fairly nearby supply of serum.

I believe thoroughly that the serum if used in sufficient quantity is efficacious, but personally I would resort to ligature just as Doctor Doughty does and, in addition, would practice the old treatment of puncture producing as free bleeding as possible.

✱

**DOCTOR DOUGHTY (closing).**—The mortality in sixty-seven collected cases of rattlesnake bite reported in Texas was 34.3 per cent where antivenin was not used. In eighty-three cases treated with antivenin the mortality was 6 per cent. The fatalities in this series probably could have been avoided, had it been possible to give the serum earlier.

Specific treatment of rattlesnake bite by antivenin should not be omitted because one may have faith in local measures which are not specific. The many first-aid kits made for the use of the layman give a sense of false security and do not urge the public to seek early administration of antivenin. The knowledge of the availability and specificity of this serum must be disseminated by the general practitioner.

#### TUBERCULOUS INFECTION—ITS INCIDENCE IN A GROUP OF CHILDREN OF ORIENTAL PARENTAGE\*

By LLOYD B. DICKEY, M. D.  
San Francisco

DISCUSSION by Harold K. Faber, M. D., San Francisco; William C. Hassler, M. D., San Francisco; William H. Hæpp, M. D., Los Angeles.

THE tuberculin skin reactions of Pirquet<sup>1</sup> and Mantoux<sup>2</sup> have been the accepted methods of determining the incidence of tuberculous infection in childhood since these discoveries were first announced.

##### PIRQUET AND MANTOUX REACTION STATISTICS

The high incidence of infection among the poorer Viennese children of 12 to 14 years of age, 81.5 per cent as reported by Pirquet<sup>3</sup>, and 94.3 per cent as reported by Hamburger and Monti<sup>4</sup> for hospital children gave rise to the impression that tuberculous infection was nearly universal by the time children had reached the age of puberty. Later statistics compiled by Hoffa<sup>5</sup>, Barchetti<sup>6</sup>, and others, from different European cities deepened this impression, although the percentages of infections reported were not as high.

Veeder and Johnston<sup>7</sup> found 48 per cent of hospital children infected between the ages of 12 to 14, and concluded "that the percentage of positive tuberculin reactions among children of

relatively the same social conditions was much lower in St. Louis than in Vienna." They further concluded that "the extent of infection among children varies in different cities and countries and is dependent on such factors as living and social conditions, the amount of tuberculosis in the community, the exposure of the child to open tuberculosis, and in all probability varies among different classes of society in the same community."

Conclusions such as the above are proved to be sound by comparing the report of Sill,<sup>8</sup> who found 48 per cent of children from 10 to 13 years to be infected, with the results of Slater<sup>9</sup>, who found only 12 per cent infected in the 12 to 14-year group. Sill's patients were selected from the lower east side of New York City, were children mostly of parents of foreign birth and with negative histories of exposure. Slater's tests were done on children "in a rural community, in which economic and hygienic conditions are unusually good." In this series the percentage of children infected did not increase with the increase in age.

##### SKIN REACTIONS IN INDIANS

Few reports in the literature have appeared to determine the incidence of tuberculous infection in other than in children of the white race. Ferguson<sup>10</sup> tested 162 Indian children of school age in Saskatchewan, and found 92.5 per cent to react positively to tuberculin tests. The high mortality rate in North American Indians from tuberculosis is, of course, well known, and Ferguson's results are not surprising in view of what is known about adult tuberculosis in the red race. Possibly a relatively large percentage of Veeder and Johnston's patients were of the negro race.

##### TUBERCULOSIS IN ORIENTAL RACES IN CALIFORNIA

The problem of tuberculosis in the Oriental races is of special interest in San Francisco, due to the large numbers of these peoples residing within the city. Members of the Oriental races are limited mostly in their residence to two different parts of the city, the Japanese section, and San Francisco's Chinatown. The latter is probably the largest Oriental section in the Occident. Figures compiled by the Department of Public Health<sup>11</sup> show that 24 per cent of all the Chinese deaths in 1926 were due to tuberculosis, a rate of 459 per 100,000 population, as compared with a rate of 99.3 per 100,000 for the rest of San Francisco.

From these figures, and from the fact that the Orientals are known to live in very congested quarters, it would be suspected that the incidence of tuberculous infection among children of the yellow race, as revealed by tuberculin tests, would be correspondingly high as compared with the incidence of infection in the children of the city at large.

During the course of a study undertaken for the San Francisco Tuberculosis Association<sup>12</sup> it was found that about 25.2 per cent of 500 children in that community reacted positively to the intracutaneous tuberculin test, a dosage of

\* A preliminary report to a more intensive study of tuberculosis in the same group of children.

From the Department of Pediatrics, Stanford University Medical School, San Francisco.

1/10 mg. of K. O. T. being used. In the 12 to 14-year group the percentage was about 42.6. In general there was shown to be a steady rise in the percentage of children reacting positively, proportionate to the age of the patients, (Table 1).

In a smaller series of Oriental children, including both Chinese and Japanese, a similar study has been made of the incidence of infection, using the same amount of tuberculin for testing. The study, however, has extended over a considerably longer period of time than was taken for a study of the first 500 children at large. This was because the attendance at the Stanford Children's Clinic of Oriental children is small as compared with the general average attendance. We do not feel that the two series are exactly comparable as it is well known that the Chinese and Japanese parents bring very few normal children to the clinic. The first study was made on unselected children who visited the clinic, and included both sick children, some of whom were later hospitalized, and well children who came for such treatments as vaccinations and toxin-antitoxin immunizations. All of the Oriental children studied visited the clinic because of some definite complaint, although some of them were minor ones.

Because of the above facts we expected our series of Oriental children to show a higher incidence of infection than proved to be the case when the series was analyzed. The age incidence of infection is tabulated in Table 2.

Charting this incidence graphically (Chart 1),

TABLE 1\*—According to Age and Sex

| Age      | —Male— |     |      | —Female— |     |      | —Total— |     |      |
|----------|--------|-----|------|----------|-----|------|---------|-----|------|
|          | No.    | No. | %    | No.      | No. | %    | No.     | No. | %    |
| Under 4  | 47     | 8   | 17.0 | 62       | 4   | 6.4  | 109     | 12  | 11.0 |
| 4 to 8   | 98     | 24  | 24.5 | 95       | 22  | 23.2 | 193     | 46  | 23.8 |
| 8 to 12  | 81     | 26  | 32.1 | 63       | 19  | 30.2 | 144     | 45  | 31.2 |
| 12 to 14 | 31     | 14  | 45.2 | 23       | 9   | 39.1 | 54      | 23  | 42.6 |
| Totals   | 257    | 72  | 28.0 | 243      | 54  | 22.2 | 500     | 126 | 25.2 |

\* From Seltz and Dickey.<sup>12</sup>

TABLE 2—According to Age and Race

| Age      | —Chinese— |     |      | —Japanese— |     |      | —Total— |     |      |
|----------|-----------|-----|------|------------|-----|------|---------|-----|------|
|          | No.       | No. | %    | No.        | No. | %    | No.     | No. | %    |
| Under 2  | 9         | 0   | 0.0  | 10         | 0   | 0.0  | 19      | 0   | 0.0  |
| 2 to 4   | 8         | 2   | 25.0 | 11         | 3   | 27.3 | 19      | 5   | 26.3 |
| 4 to 8   | 21        | 7   | 33.3 | 24         | 11  | 45.1 | 45      | 18  | 40.0 |
| 8 to 12  | 9         | 4   | 44.4 | 16         | 9   | 56.2 | 25      | 13  | 52.0 |
| 12 to 14 | 7         | 4   | 57.1 | 4          | 2   | 50.0 | 11      | 6   | 54.5 |
| Totals   | 54        | 17  | 31.5 | 65         | 25  | 38.5 | 119     | 42  | 35.3 |

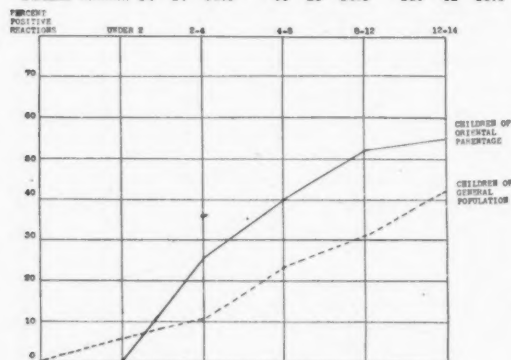


Chart 1—Age Groups.

a steady rise in the percentage of positive reactions is revealed, in general coincident with the advance in age. Nineteen children (nine Chinese and ten Japanese) under 2 years of age were tested, none of whom gave positive reactions. The curve for the incidence in Chinese children, if charted, parallels that for the children of the general population quite closely, but is only slightly, though definitely higher. It is not so high as one would expect from the type of Chinese child visiting the clinic, and from the fact that the mortality from tuberculosis among Chinese is about  $4\frac{1}{2}$  times that of the rest of the population in San Francisco.

The Japanese are seen to have a considerably higher incidence of tuberculous infection for all age groups as compared with the child population at large, and as compared with the Chinese, except the 12 to 14-age group, where the number tested was comparatively small.

#### CONCLUSIONS

1. In a series of 119 children of various ages up to 14, all of Oriental parentage, there was an incidence of tuberculous infection, as revealed by intracutaneous tuberculin tests, of 35.3 per cent.
2. The incidence for Chinese children was 31.5 per cent; for Japanese, 38.5 per cent. While both of these figures are definitely above the 25.2 per cent of infection of the child population at large for the same city, it must be remembered that the mortality rate from tuberculosis among the Chinese in San Francisco is  $4\frac{1}{2}$  times that of the rest of the city, and probably for the Japanese is about the same. Hence the incidence of tuberculous infection reported among children of Oriental parentage is lower than might have been anticipated.
3. No explanation is offered for this observation. It might possibly be explained on the basis of improved hygienic conditions which present day Oriental children in California are enjoying over their parents, or over what their parents were subject to at the time when they were children.

Stanford University Hospital.

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#### DISCUSSION

HAROLD K. FABER, M.D. (Stanford University Medical School, San Francisco).—This admirable study by Doctor Dickey forms part of a program instituted and supported for nearly three years by the San Francisco Tuberculosis Association for the purpose of studying the incidence of tuberculosis among the children of San Francisco. The work has been of the utmost interest and of both practical and theoretical importance. A previous report showed that instead of the 70 or 80 per cent assumed on the basis of earlier reports from other localities, less than 50 per cent of children, today and in this locality, under the age of 14 years, show evidence of tuberculous infection. Now it is shown that in that racial section of the community certainly most heavily infected with tuberculosis, a section subject to the unfavorable influences of overcrowding and other elements of faulty hygiene, the children have only a moderately higher frequency of infection than the community as a whole. This is striking corroboration of the general truth that the battle against tuberculosis is fast being won. It is not necessary to enter into the controversy which is being waged over the causes of the general decline of the disease. In the case of the Oriental children one may point to such possible factors as second generation adaptation to American conditions, and to increased prosperity; more important, I think, is the probability that the educational campaign for better personal hygiene, for the out-of-doors life, for more milk, for better housing and ventilation, for more wholesome living in general is having its effect here, too, perhaps more slowly than with the rest of the population but nevertheless to a creditable and increasing extent. That the incidence is at all higher among the Oriental children than among the rest clearly points the direction in which special efforts should be made in the campaign against the disease, not only for the sake of the Orientals themselves but for the sake of the community as a whole.

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WILLIAM C. HASSLER, M.D. (1085 Mission Street, San Francisco).—This preliminary report of Doctor Dickey on the incidence of tuberculous infection in a group of children of Oriental parentage, as shown by the reaction of Mantoux, is extremely interesting to those working with tuberculosis in San Francisco on account of the large Oriental population. One would suppose, as Doctor Dickey has brought out, that on account of the very high Chinese death rate from tuberculosis the incidence of infection, as shown by the tuberculin test, would be in the same proportion, whereas his figures show only a slight increase above the incidence of infection in children of American parentage. Doctor Faber has offered a very plausible explanation of this. In the case of the Chinese there is second and third generation adaptation to American conditions, but this does not apply so universally to the Japanese. However, the housing conditions and personal hygiene in both races are rapidly assuming American standards and both races consume the same rigidly inspected milk supplied to the entire population of San Francisco. A further study of these children of Oriental parentage will be watched with great interest. Repeated examination of some of the same children

with a standardized tuberculin would also be of interest.

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WILLIAM M. HAPP, M.D. (523 West Sixth Street, Los Angeles).—Doctor Dickey has very correctly called attention to the fallacy of the statistics on tuberculous infection among children of different ages as determined by tuberculin tests. The high percentage of infection found in European clinics was unquestionably due to the fact that the children tested were clinic patients, many of whom were sick, and such results do not indicate the cross section of the population at large. The figures quoted for California city children, giving a positive percentage of forty-two per cent for ages twelve to fourteen, is probably higher than the incidence of infection among California city children in general.

One factor which must be considered is the number of tuberculous adults who migrate here for their health. The incidence of infection among their children is very high. The percentage of positive reactions among children will be higher when the intracutaneous test is used than with the Pirquet test. For routine testing, 1/100 mg. should be used and the amount used should always be stated, as with stronger amounts the percentage of positive reactions will be higher. It is very essential to use a standardized tuberculin which has been tested and found to be potent on known reactors, as some of the solutions on the market are relatively inactive. The intracutaneous test, when thus performed, is far more reliable than the Pirquet test and has largely superseded it.

It must be remembered that a positive tuberculin test indicates infection and not disease or even activity. Such infection without activity is not necessarily harmful to the individual, but may be valuable in establishing an immunity against subsequent infections.

#### GOLD AND SODIUM THIOSULPHATE IN THE TREATMENT OF LUPUS ERYTHEMATOSUS\*

By HIRAM E. MILLER, M.D.  
San Francisco

DISCUSSION by Samuel Ayres, Jr., M.D., Los Angeles; George F. Koetter, M.D., Los Angeles; Thomas J. Clark, M.D., Oakland; Moses Scholtz, M.D., Los Angeles.

SCHAMBERG'S article on the treatment of lupus erythematosus with gold and sodium thiosulphate in February, 1927, was so convincing that most dermatologists are now using the drug in the treatment of this disease. His twenty-five patients, as well as thirty additional ones reported by Whitehouse and Bechet in November of the same year, were definitely improved or cured under this treatment. In view of the fact that lupus erythematosus was considered to be practically incurable by all previous types of therapy, these results are quite remarkable. In this paper I am reporting the results of gold and sodium thiosulphate treatment in fifty-three patients with lupus erythematosus and twenty-one patients with various other chronic skin diseases.

Gold compounds have been a subject of study in the treatment of tuberculosis and allied diseases since 1890 when Koch demonstrated their effect on the tubercle bacillus in the test tube.

\* From the Department of Dermatology, University of California Medical School, San Francisco.

\* Read before the Dermatology and Syphilology Section, California Medical Association, at its Fifty-Seventh Annual Session, April 30 to May 3, 1928.

TABLE 1.—*Gold and Sodium Thiosulphate in Treatment of Lupus Erythematosus.*

| Number of Patients Treated | Severity of Eruption |          |              | Total Number of Injections | Average Number of Injections |
|----------------------------|----------------------|----------|--------------|----------------------------|------------------------------|
|                            | Mild                 | Moderate | Disseminated |                            |                              |
| 53                         | 24                   | 28       | 1            | 378                        | 7                            |

In recent years Bruck and Glück, Martenstein and others have reported on laboratory and clinical experiences with various gold preparations. In 1917 Feldt of Germany made a compound (4-amino 2-aurothiophenol carbonic acid) to which the trade name of "krysolgan" was given. This has been used extensively abroad in the treatment of cutaneous tuberculosis and lupus erythematosus. In 1924 Mollgard of Copenhagen published a new and economical method for the manufacture of gold and sodium thiosulphate. It had previously been produced in 1845 by Fordos and Gelis, but by an expensive and almost prohibitive process. The trade name of "sancrysin" was given to the drug. It remained, however, for Schamberg and Wright of Philadelphia to use it in the treatment of lupus erythematosus. Through their efforts the drug has been put on the American market at a reasonable price.

Gold and sodium thiosulphate is a fine white crystalline substance, readily soluble in water and comparatively nontoxic to man. It is given intravenously, at five to seven-day intervals, in one decigram doses, dissolved in four to five cc. of distilled water. The first dose should consist of one-half a decigram to test the patient's tolerance to the drug. A course of six to eight weekly treatments is generally given and after a rest period of two to four weeks they are again resumed. When the lesions have cleared, recurrences are less numerous if the patient receives one injection every two or three weeks for three to four months.

## REPORT OF PATIENTS TREATED

## I. LUPUS ERYTHEMATOSUS

For the past eight months we have been treating all patients with lupus erythematosus at the Dermatological Clinic of the University of California Medical School and in private practice with gold and sodium thiosulphate. Table 1 shows the number of patients treated and Table 2 the results of this treatment. Some of the patients had the disease for twenty years or more, others for only a few months. The improvement was as striking in those of long duration as in the early ones. The patients in whom all foci of infection had previously been removed did not improve more rapidly or show any more recurrences than those in whom this phase of the disease had not been investigated. The period of observation, however, has been too short to draw any definite conclusions in this regard. Thirty-one (60 per cent) of them are clinically well and sixteen (30 per cent) are improved and still under

treatment. Most of them will probably clear under further therapy.

## 2. VARIOUS CHRONIC SKIN DISEASES

Several patients with skin diseases generally considered to have a tuberculous background and some of unknown etiology were treated with gold and sodium thiosulphate. Table 3 shows the result of this treatment. Not any of them were cured, but those generally classified as having a tuberculous etiology were definitely improved, *i. e.*, lupus vulgaris, erythema induratum and papulonecrotic tuberculide. I very much doubt, however, that further treatment will cure them. The improvement in four patients with psoriasis and one with urticaria pigmentosa is probably only temporary.

## REACTIONS

Table 2 shows three patients with reactions. One patient with a rather extensive lupus erythematosus of the discoid type, developed an extensive erythematous eruption over the face, neck and arms after the second injection. It was indistinguishable from an acute disseminated lupus erythematosus. It cleared in three weeks' time and all other evidence of the disease as well. The second patient with a reaction developed a similar eruption. It cleared in about two months' time and the original disease was about 35 per cent improved when it subsided. The third reaction was in the form of a mild jaundice and occurred in a patient with heart disease and an associated enlargement of the liver. I do not think that the drug had anything to do with its development. I have not observed any foreign protein reactions with general malaise, fever, etc., or any immediate reactions with respiratory distress, vomiting, etc.

## ACTION OF THE DRUG

The mode of action of gold and sodium thiosulphate in the treatment of lupus erythematosus is not definitely understood. It is generally assumed that the disease is due to some focus of tuberculosis in the body and that the drug cures, or at least improves, this infection. In the gold treatment of pulmonary and other types of tuberculosis, such satisfactory results are not obtained.

Some authors maintain that the drug acts directly on the capillary endothelium. This could easily explain the rapid improvement in some patients. Other authorities are of the opinion that

TABLE 2.—*Results of Treatment—Lupus Erythematosus.*

| Total                 | Improved | Well | Lost | Recurred | Reactions |
|-----------------------|----------|------|------|----------|-----------|
| 53                    | 16       | 31   | 6    | 4        | 3         |
| Average No Treatments | 6        | 8    | 2    | 9        | 2         |

TABLE 3.—*Gold and Sodium Thiosulphate in Various Chronic Skin Diseases*

| Total  | Lupus Vulgaris | Erythema Induratum | Psoriasis | Lichen Planus | Urticaria Pigmentosa | Tuberculide | Eczema  |
|--------|----------------|--------------------|-----------|---------------|----------------------|-------------|---------|
| 21     | 5              | 4                  | 4         | 2             | 1                    | 2           | 3       |
| Result | Improved       | Improved           | Improved  | Unimpr.       | Improved             | Improved    | Unimpr. |

gold acts in the same manner as tuberculin, causing a hyperemia around the diseased areas with a subsequent healing by fibrosis.

#### SUMMARY

Gold and sodium thiosulphate is of proven efficacy in the treatment of lupus erythematosus. Sixty per cent of fifty-three patients treated with this drug during the past eight months are clinically well. Thirty per cent are markedly improved and will probably clear under further treatment. Patients with lupus vulgaris, erythema induratum and papulonecrotic tuberculide are improved, but have not entirely cleared after a rather prolonged use of the drug.

384 Post Street.

#### DISCUSSION

SAMUEL AYRES, JR., M. D. (517 Westlake Professional Building, Los Angeles).—Dr. Miller has very ably summarized the present status of gold in the treatment of lupus erythematosus. The favorable results which he has reported agree substantially with the findings of other investigators. Although it is interesting to note for statistical purposes that patients who have obvious foci of infection clear up as rapidly under gold as do those who have not, nevertheless all such definite foci should be removed. We have all seen occasional cases where a striking improvement or even a cure has followed such removal; in all probability, less gold would be required in these cases, and since gold has been known to produce serious toxic reaction, the advantage of giving the least possible amount is apparent.

Gold has been given over a considerable period of time without untoward symptoms. One of my patients received a total of thirty injections of 0.1 gram each, at weekly intervals except for a lapse of about two months after the fifteenth dose. In this case a very disfiguring eruption of about four years' standing was cured except for several lesions in the scalp, which remained rough and scaly.

My experience has not been sufficient to justify any detailed statistics. In nine private and clinic cases there were no failures and improvement ranged from 40 to 95 per cent. In two cases where a severe generalized erythema-edematous reaction developed after the second or third dose, marked improvement in the lupus erythematosus followed recovery from the reaction. Another case showed a milder type of reaction characterized by redness and burning of the mucus membrane of the mouth, which disappeared on temporary cessation of treatment followed by smaller doses and longer intervals.

In the employment of gold in the treatment of lupus erythematosus, dermatology has made a tremendous stride in the successful handling of a hitherto extremely obstinate and disfiguring disease.

✱

GEORGE F. KOETTER, M. D. (1136 West Sixth Street, Los Angeles).—My series consists of eighteen private and clinic cases. Although too small for detailed statistics, two of the cases are worthy of brief description.

Case A.—Male; discoid variety of eight years' dura-

tion with areas of atrophy in the scalp. No improvement was noted after eight injections of gold sodium thiosulphate, but on removing the focus of infection in the prostate, rapid progress occurred.

Case B.—Male; extensive lesions with "cigarette paper-like" scarring on the face, in the scalp and dorsum of both hands. Rapid improvement was noted after the third injection, but no improvement to the atrophied areas in the scalp. Following the tenth and final injection, the bald areas showed a fine regrowth of hair.

The use of gold sodium thiosulphate has given us a powerful drug in the treatment of a recalcitrant disease.

✱

THOMAS J. CLARK, M. D. (146 Lake Street, Oakland). Dr. Miller's report should be of definite value to the medical profession.

The cases of lupus erythematosus that have been under my care in the past year or so, have been treated by application of phenol followed by an application of the high frequency electric current, and as the results obtained have been very satisfactory, it was considered wise to continue.

Gold preparations in the treatment of tuberculous patients presenting the disease in various types have been used and good results reported by some clinicians. Gold has also been used in the treatment of syphilis, carcinoma, nervous diseases and many other conditions. That it has active therapeutic value has been demonstrated. Gold has been reported as less toxic than most of the heavy metals, but it is eliminated slowly from the system, chiefly by the bowel.

That irritation of the kidneys may result should be kept in mind, as many have reported an associated albuminuria with lupus erythematosus cases. The severe reactions occurring in some of these cases after a few injections of the gold are warnings that we must proceed carefully.

The cause of lupus erythematosus and the action of gold preparation are as yet not fully known. The gold seems to stimulate the absorption of inflammatory cellular products that block the lymph and small vessels of the corium and thus allow normal nutritional changes to continue.

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MOSES SCHOLTZ, M. D. (718 Brockman Building, Los Angeles).—Doctor Miller's presentation of this timely and important subject is to be commended for its conciseness and terseness. The introduction of gold sodium thiosulphate in the treatment of lupus erythematosus is unquestionably one of the most striking achievements of modern dermatology.

My personal experience with some twenty cases fully confirms the general impression that gold treatment is well nigh specific in lupus erythematosus.

The dosage used in the beginning was 25 mgs., later 50 mgs., once a week. The improvement noted was uniform after the first three or four injections or sooner, and steadily progressed until after eight to fifteen injections. The case practically cleared up.

In one obese female patient, gold was used intramuscularly. The improvement was perceptibly slower than in other cases, but there was no untoward local reaction. In a patient sixty-five years of age with an inveterate psoriasis, I have seen a pro-



nounced universal morbilliform eruption develop after a third injection of 100 mgs., while two previous injections of 50 mgs. were well tolerated. There was no effect on the psoriasis in this case. In four other cases of psoriasis there was an improvement, but only temporary.

It is of interest to note that severe inveterate cases with multiple patches responded as promptly as mild superficial cases with one or two patches. The clinical response was so prompt and certain that the local treatment was abandoned in all cases.

The possibility of relapse, a factor of the greatest importance for the proper evaluation of the new treatment, cannot be answered definitely at the present time. The longest period of time which has elapsed since the completion of the gold treatment in various cases is from six to eight months. However, even this short time shows that the tendency to relapse is slight, and easily controlled by the continuance of treatment.

### SPINAL ANESTHESIA\*

WITH SPECIAL REFERENCE TO THE USE  
OF EPHEDRIN

By HALL G. HOLDER, M. D.  
San Diego

MANY intercurrent diseases complicate and increase the risk of surgical intervention. With the advent of modern methods and materials, more cases entailing grave risks are brought to the operating room. Frequently the operative procedure is of secondary importance to the choice of a safe anesthetic. Today both patient and surgeon demand that anesthesia shall be as free as possible from immediate and remote dangers and complications. In addition the surgeon should require and receive perfect relaxation to facilitate his work with either scalpel or cautery.

#### SPINAL ANESTHESIA

Certainly there is no ideal routine anesthetic agent in general use at the present time. Spinal anesthesia properly administered and controlled meets a definite need in an increasing number of cases. From a review of the literature spinal anesthetic is receiving more frequent use.

Fear and prejudice still linger in the minds of the majority of the surgical profession who are unfamiliar with its use. Much of the reported disadvantage, mortality and sequelae followed the use of drugs and methods much inferior to those of today. Also many of the bad results have been on a class of patients who were deemed poor risks and unsuitable for other anesthetic methods. I have never been able to understand the reasoning that permitted spinal anesthesia which was considered dangerous and unsuitable for the average surgical procedure, to be used in the debilitated, the cachectic, the icteric, and the ascitic, to the exclusion of one of the so-called safer methods. In comparing inhalation anesthesia with regional, one must consider carefully statistics of the former. For the greater part these reports come from the best clinics and

hospitals. The smaller hospitals and less experienced anesthetist's results are never recorded and, therefore, there is no record of the mortality in those fields where the greatest mortality exists. The real mortality of inhalation anesthesia does not occur while the patient is on the operating table, but is secondary, taking place from one hour to one week following induction. Secondary mortality is 95 per cent of the total; a meager 5 per cent is primary mortality. If the laws which govern spinal anesthesia, based on anatomy and physiology, were thoroughly understood the limitations and contraindications would also be understood and the primary mortality of spinal anesthesia would be no greater than that of inhalation, and secondary mortality would be nil. Pitkin<sup>4</sup> in a recent article on this subject says, "If I were to prophesy, inhalation anesthesia in general will be in a class with chloroform ten years hence and spinal or regional will be the anesthetic of choice."

#### ADVANTAGES OF SPINAL ANESTHESIA

With patients properly prepared, simplicity of administration is the first advantage. There need be no apprehension, compromised psychic state or the slightest discomfort of induction. Compared with other forms of regional anesthesia the technique is easy and simple, and with slight modification is applicable to a wide range of operations over a large portion of the body. It has no bad effect on any important organ as do the inhalation anesthetics in varying degrees. Metabolic equilibrium is little disturbed; prompt recovery unattended by nausea and vomiting, makes possible early ingestion of food and fluids. Post-operative complications that sometimes accompany inhalation anesthesia such as ileus, acidosis and aspiration pneumonia are never seen. Acidosis is prevented by lack of derangement of any vital function and any necessity or cause for dehydration pre- or postoperative. Paralysis of the gastro-intestinal tract, always an annoying and not infrequently disastrous postoperative complication, is rarely seen after spinal anesthesia, and then only in a comparatively mild form. A paralysis of the bowel is a familiar concomitant of violent irritation of the sensory nervous mechanism such as is produced by opening the peritoneal cavity and traumatization of structures within. The clinical importance of postoperative paralytic distention of the bowel producing associated secondary chemical changes in the blood is well known. Markowitz and Campbell<sup>1</sup> recently confirmed the observations of Wagner<sup>6</sup> that spinal anesthesia promptly restores bowel movements in cases of paralytic ileus. They conclude that paralytic ileus is of the nature of a reflex inhibition produced by trauma dependent on the integrity of the reflex arc, and when the continuity of the arc is broken by the effect of spinal block the ileus is relieved. This phenomenon is produced by anesthesia of the sympathetic fibers to the gut, permitting the unopposed vagus action to increase peristalsis. Consequently the mildness or absence of ileus in these cases.

Intraspinal block effects perfect anesthesia with complete muscular relaxation. It produces a nega-

\*From the Surgical Clinic of Doctors Thomas O. Burger, Clyde J. Osborne, and Hall G. Holder, San Diego.

<sup>1</sup>Read before the Anesthesiology Section, California Medical Association, at its Fifty-Seventh Annual Session, April 30 to May 3, 1928.

tive abdominal pressure, the intestines becoming flat and falling back on the vertebral column, thus allowing easy and efficient exploration. Surgical technique may be carried out with a minimum of trauma. The particular advantage and importance of this silent abdomen is appreciated in suppurative conditions within the peritoneal cavity. Because of the absence of coughing, vomiting and distention there is little strain on the abdominal wall after operation, thereby establishing the most favorable condition for wound repair and comfort to the patient.

#### PHYSIOLOGY

Spinal anesthesia has not had the good fortune to interest physiologists as other forms of anesthesia have. It is only through clinical observation that little by little one has come to understand its fundamental physiology.

First it is a regional anesthesia; strongly radicular, acting on the intraspinal segment of the posterior roots at the level of the injection. The diffusion of the anesthetic to the anterior roots does not necessarily occur. If the anesthetic solution is injected slowly the analgesia is localized only to a few roots, and the motor power remains unaffected. When injection is made in the fourth lumbar space there is no question that spinal anesthesia is a radicular regional anesthesia, since one is able to follow its course. First the perineum, then the heel, then anesthesia progresses up the leg, and finally reaches the thigh.

#### DIFFUSION OF ANESTHETIC IN SPINAL FLUID

The circulation of the spinal fluid is so slow that it may be eliminated as a factor. Gravity plays practically no rôle as there is no change in the anesthetic level by putting the patient in Trendelenburg position or the reverse. The diffusion of the anesthetic is exactly dependent upon three laws of the diffusion of one fluid in another in a closed vessel as follows:

1. The diffusion is inversely proportional to the concentration of the solution injected which with an isotonic or, perhaps, slightly hypertonic solution such as we obtain by dissolving the novocain in spinal fluid, limits the diffusion to five or six roots. Dilution by using larger amounts of spinal fluid therefore increases the height of anesthesia. This practice of dilution has the additional advantage of allowing the novocain to become fixed more rapidly, thus diminishing the chance of toxic effect.

2. The diffusion is inversely proportional to the pressure of the cerebrospinal fluid. It is a recognized fact that the best anesthetic is obtained in those cases with an elevated intraspinal pressure.

TABLE 1.—Novocain with Ephedrin

| Dose Novocain             | Average pulse variation from preanesthetic reading | Average blood pressure variation from preanesthetic reading in mm. of Hg. |       | Per cent of cases |
|---------------------------|--|---|-------|-------------------|
|                           |  | Plus  | Minus |                   |
| 50-100 mg.                | Plus 2.9   | Plus 9.5  |       | 15.8              |
| 100 mg. and up            | Minus 1.1  | Minus 12.3  |       | 26.4              |
| Novocain without Ephedrin |  |   |       |                   |
| 50-100 mg.                | Plus 3.3   | Minus 9.6   |       | 54.9              |
| 100 mg. and up            | Plus 15.7  | Minus 37.5  |       | 2.6               |

3. Diffusion is also directly proportional to the speed of injection. If the solution is forced in, the diffusion is maximum and instantaneous. But this procedure is improper technique, as the diffusion instead of remaining localized to the posterior roots, where desired, is brought to the anterior roots as well, with an associated vasomotor paralysis. Thus much of the fall in blood pressure may be controlled by a slow, careful administration. The reason for this drop in blood pressure is a paralysis of vasomotor control, particularly of the splanchnic area. The vasomotor fibers emanate from the cord in the region between the level of the second dorsal and the third lumbar spinal roots. The splanchnic area is controlled by the region from the sixth dorsal to the third lumbar, all of which are involved in anesthesia of the abdominal wall. If these fibers are blocked a pronounced drop in blood pressure ensues.

#### ADMINISTRATION

The anesthetic agent is novocain crystals in hermetically sealed ampoules; the diluent, spinal fluid.

The method of induction is simple. Preparation by the routine use of morphin and scopolamin is practiced. Only three points concerning the puncture need emphasis: first, asepsis; second, administration with patient lying on either side, thus avoiding discomfort and the initiation of cerebral anemia; and third, use of twenty or twenty-two gauge conical or bevel-pointed needle so as to minimize trauma to the meninges, thereby practically eliminating cephalalgia as a postanesthetic sequela. The use of a fine needle after

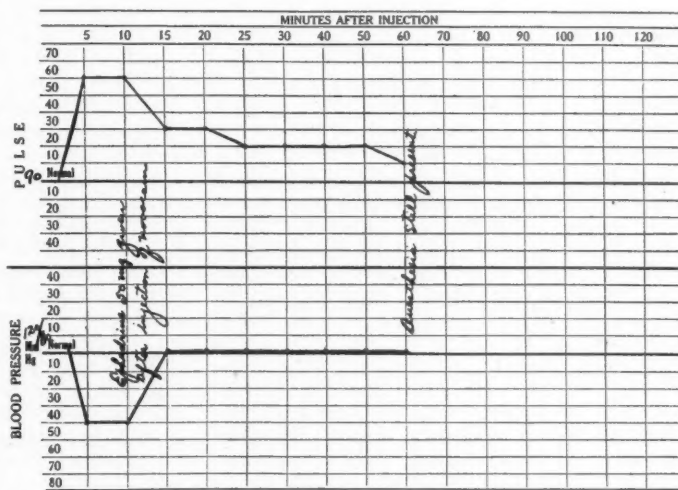


Chart 2—Laparotomy: 125 mg. of novocain in second lumbar. Ephedrin, omitted by error was subsequently given after the initial marked fall in blood pressure with restoration to the pre-anesthetic level. Note compensatory reaction of pulse.

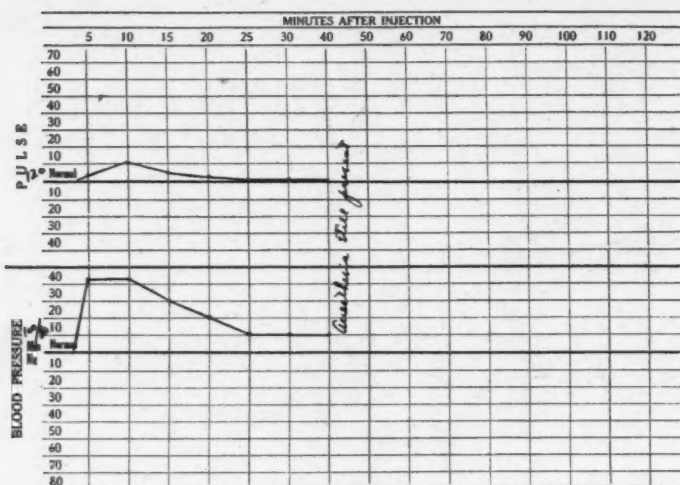


Chart 3—Laparotomy in poor anesthetic risk with bilateral pulmonary tuberculosis; 100 mg. of novocain in L2; the systolic blood pressure was 100, the ephedrin not only prevented a fall but maintained same over this level throughout the operation. Note little change of pulse rate.

skin infiltration at the site of puncture makes this procedure practically painless. Following administration the patient should be watched carefully by some responsible person. Blood pressure readings should be frequently taken and the patient entertained if he is disposed to talk. These patients require as much attention as those receiving an inhalation anesthetic, so that uncontrollable complications will not occur.

#### HEIGHT OF ANESTHESIA

The height of anesthesia depends upon the foregoing laws. Chief among these are the site of puncture, the amount of fluid withdrawn and, to a less extent, the amount of the drug used. These factors are utilized in different ways by different men in getting the desired level of anesthesia. The method of which Jonnesco has been the chief exponent depends mainly on the location of the puncture, it being his purpose to limit the area of anesthesia. The disadvantage of this method, however, is the possibility of cord injury with a puncture above the level of the second lumbar vertebra. Punctures above this point can, of course, usually be made without injury, as the point of the needle is stopped in the subarachnoid space before the cord is reached. However, occasionally the arachnoid space is obliterated because of adhesions. There is always an added safety by making punctures in the lumbar region and gaining height of anesthesia in other ways. For perineal anesthesia the puncture is made in the fourth lumbar space; for operations on the lower extremities, in the third, and for laparotomies, in the second lumbar. Height of anesthesia after puncture in the second space is obtained by dissolving the novocain in larger amounts of spinal fluid, never exceeding an upper limit of ten cubic centimeters. Curiously enough, increase in the dose of the drug after a certain point has no decided effect in increasing the level of anesthesia. As most of the work reported is gynecological

we needed only the simplified doses of 50 mg. in the fourth lumbar for perineal anesthesia and 100 to 125 mg. in the second lumbar for satisfactory anesthesia of the lower abdomen. In most instances it was only necessary after puncture to collect 2 to 3 cc. of spinal fluid in the opened ampoule of novocain, dissolving same and returning solution. Anesthesia is almost instantaneous, so that by the time the patient is prepared the surgeon may proceed. From our data the average length of anesthesia was about one hour. This corresponds favorably with the observations of others. McMullin<sup>2</sup> is the first in this country to refer to the use of adrenalin in the anesthetic solution. I am aware that this is practiced in certain Conti-

nental clinics with the claim of lengthened anesthesia. However, his results from its use present no advantages. For long operations it becomes necessary to supplement with other forms of regional or inhalation anesthesia. Rarely should it be necessary to exceed one hour with the average surgical procedure, and if longer anesthesia be necessary, gas oxygen or ethylene during the closing minutes is most satisfactory. The inhalation anesthetics have the advantage of counteracting any depressant effect from the spinal, and raise blood pressure if it is still below normal.

#### STABILIZATION OF BLOOD PRESSURE BY PRELIMINARY INJECTION OF EPHEDRIN

The principal objection to spinal anesthesia has been the fall in blood pressure, produced by pooling of blood in the splanchnic area, due to vasomotor paralysis. Surprising results in stabilization have been obtained by the subcutaneous use of ephedrin fifteen minutes before administration. Not infrequently there is an actual elevation of the blood pressure throughout the anesthetic or a stabilization at the preanesthetic level. The usual curve of blood pressure readings is represented by a slow gradual drop of 10 to 20 mm., at this point striking a constant level until the anesthetic begins to wear off, when it gradually returns to the original reading. Occasionally a marked drop is seen, most often in cases of hypertension, when repetition of the ephedrin subcutaneously or intravenously returns the blood pressure to a satisfactory level. Since using ephedrin, vertigo, nausea and vomiting are much less common, which indicates that these were results of the sharp drop in blood pressure. Formerly adrenalin was our chief weapon against the vasomotor paralysis but, due to its fleeting action, has been supplanted by ephedrin, which has a long-sustained epinephrin-like action. The use of ephedrin in this connection was first reported by



Ockerblad and Dillon<sup>8</sup> in a small series of urologic cases. They used from 125 to 200 mg. of novocain and were able successfully to control blood pressure fall. It was their practice to give the ephedrin to restore blood-pressure level after it had dropped, rather than to prevent the initial drop by preliminary subcutaneous injection. Since its use, spinal anesthesia is given with less anxiety to the anesthetist and to the physician and discomfort to the patient.

#### ANALYSIS OF RESULTS

In a series of 151 personally administered cases, 17.8 per cent of which are laparotomies, mostly gynecological, 74.8 per cent vaginal or perineal operations including one external urethrotomy, and 7.2 per cent combined laparotomy and vaginal operations, there was one failure due to disengagement of the needle from the spinal canal during administration, but no mortality or morbidity as the result of the anesthetic. In 7.9 per cent the anesthetic wore off before completion of the operation, and these were finished under gas oxygen, although during the period of anesthesia the effectiveness was 100 per cent in each instance. Nervousness and minor subjective sensations were complained of in 4 or 2.6 per cent of cases; nausea during anesthesia in 5 or 3.3 per cent, and vomiting in only 3 or 1.9 per cent. There were no post-anesthetic sequelae other than headache, which occurred in only 3 or 1.9 per cent of cases, in one alone lasting more than twenty-four hours.

In comparison with these favorable results with novocain Schultz<sup>9</sup> in a recent article on spinal anesthesia in which apothesine was used records serious headache in one in every fifteen cases and the necessity for administration of oxygen throughout the anesthetic to control retching and vomiting. Pitkin<sup>4</sup> states that the above complications with apothesine are common, and reiterates the known value and desirability of novocain as the anesthetic agent.

Approximately one-half of the series received ephedrin. The majority of those given the larger doses of novocain received the ephedrin, while the smaller dose of novocain was given without its use. The contrast between blood pressure and pulse with and without ephedrin is seen in the above chart. It will be noted that those cases given 100 mg. or more novocain without ephedrin had an average blood pressure drop of 37.5 mm., while those receiving ephedrin had an average drop of 12.8 mm. Cases receiving 50 to 100 mg. of novocain without ephedrin had an average fall of 9.6 mm., while those receiving ephedrin had an average elevation above the preanesthetic reading of 9.5 mm. The pulse in general shows a compensatory action best seen in the marked drop in blood pressure in those cases receiving large

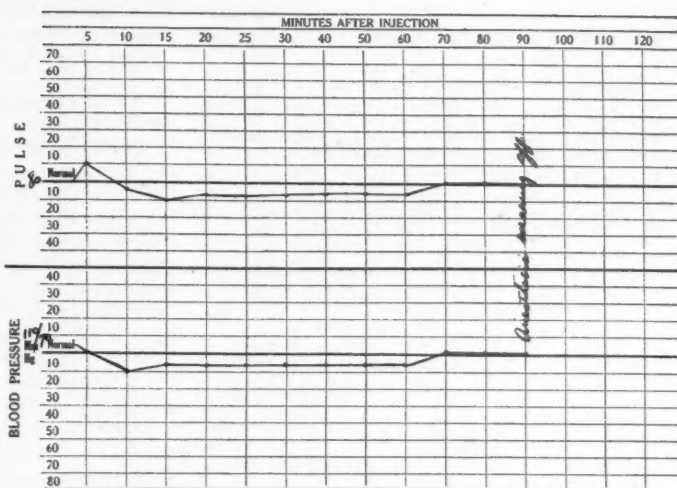


Chart 4.—Laparotomy: 125 mg. of novocain in L2; practically no change in pulse or blood pressure showing stabilizing effect of ephedrin. The anesthetic lasted one and a half hours.

doses in which ephedrin was not employed, there being an average increased rate of 15.7 beats per minute.

The accompanying charts represent the type of record used in these cases and graphically show the action of ephedrin.

#### INDICATIONS AND CONTRAINDICATIONS

Spinal anesthesia is adaptable to all classes of operative procedures below the costal margin. It is the method of choice in cases complicated by degenerative diseases of any vital organ, purulent exudation within the peritoneal cavity or a toxic state, as for example, the result of intestinal obstruction.

Its only contraindication is in the presence of severe traumatic or hemorrhagic shock.

#### SUMMARY

One hundred and fifty-one cases of spinal anesthesia are reported with no morbidity or mortality, and only one failure. Subjective and objective symptoms and sensations during the anesthetic occurred in about 3 per cent of cases. There were no postanesthetic sequelae other than headache, which occurred in 1.9 per cent of cases, in one lasting more than twenty-four hours.

Approximately one-half of the series received ephedrin. In those cases given 100 mg. or over of novocain without ephedrin, there was an average blood pressure drop of 37.5 mm., while those receiving it had an average drop of 12.8 mm. The sustained epinephrin-like action of ephedrin is definitely shown and its value in stabilizing blood pressure in spinal anesthesia clearly indicated.

#### CONCLUSIONS

1. Spinal anesthesia properly administered and controlled is a safe anesthetic for operations below the costal margin. Induction is simple and without discomfort.

2. It is nontoxic and without effect on the function of any organ. For these reasons it is the anesthetic of choice in toxic and debilitated

conditions, degenerating diseases of vital organs or suppurative conditions within the peritoneal cavity.

3. Recovery is unhampered for the same reasons. Ileus and acidosis do not occur, nutrition is maintained and wound healing unretarded. Postanesthetic sequelae are limited to an occasional brief headache.

4. Ephedrin by preventing blood pressure fall controls spinal anesthesia and eliminates discomforts during the anesthetic.

5. Spinal anesthesia is contraindicated in severe traumatic or hemorrhagic shock.

1301 Medico-Dental Building.

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#### CLINICAL STUDY OF TUBERCULIN FRACTIONS PREPARED FROM NONPROTEIN CULTURE MEDIA\*

By FREDERICK EBERSON, M. D.  
AND  
ERNST WOLFF, M. D.  
San Francisco

DISCUSSION by Chesley Bush, M.D., Livermore; F. M. Pottenger, M.D., Monrovia; A. L. Bramkamp, M.D., Banning.

IN this report is presented a comparative study of skin reactions made with old tuberculin and with a fraction of tuberculin prepared from a synthetic nonprotein culture medium in which tubercle bacilli had been cultivated. The fractional tuberculin has already been described in detail and results with its use reported in earlier publications.<sup>1</sup> The apparent advantage of such a substance for diagnostic purposes lies in its freedom from nonspecific irritating components and from protein materials that are unrelated to the tubercle bacillus itself.

In studying the efficacy of test materials it is not sufficient to compare the reactions without some basic standard. It would seem more important to analyze the observed discrepancies in terms of a carefully evaluated group of clinical symptoms, signs, and auxiliary laboratory data and to

refer the observations to the patient, who must always be considered as the standard.

#### CLASSIFICATION OF CLINICAL MATERIAL

The diagnosis of juvenile tuberculosis presents many difficulties of which the greatest, perhaps, lie in that large borderline group of patients having symptoms and signs which generally render a patient a tuberculosis suspect. There is doubt, however, that the so-called symptom-complex of tuberculosis in childhood is by any means a fixed quantity and can as such be used as a basis for certain diagnosis. An attempt was made, therefore, in our study to subject all the available data to an exhaustive analysis with the aim of correlating wherever possible the numerous variables most likely to confuse the picture. By this method we were able to compare the different skin reactions in terms of definite variables that occurred in the fixed groups chosen for study.

Our classification, as a point of departure, was based upon the complete clinical examination, history, and x-ray findings, with the results of old tuberculin (O. T.) tests as a tentative gauge for comparison with the tuberculin fractions.

#### SYMPTOMS

The symptoms considered were loss of weight, or failure to gain, lack of appetite, fatigability, cough, night sweats, lassitude, nervousness, and elevation of temperature.

#### CLINICAL FINDINGS

The points considered were malnutrition, tuberculous adenitis, involvement of bone, enlarged cervical lymph nodes, phlyctenular processes and percussion and auscultation findings.

#### DIAGNOSIS AND CLINICAL IMPRESSION

The tuberculous group comprised pulmonary tuberculosis, bronchial lymph node tuberculosis, tuberculous cervical adenitis, healed primary focus, tuberculosis of bones and peribronchial tuberculosis. The nontuberculous group included enlarged bronchial glands, nontuberculous lung disease, clinically normal patients, the three named having positive tuberculin tests (O. T.), and a group with negative tuberculin tests and likewise free from tuberculous manifestations.

In all the groups attention was paid to associated diagnoses in every case, so that the possible effect upon tuberculin reactions of complicating clinical conditions might be properly interpreted.

#### ROENTGENOGRAM FINDINGS

Chest films were diagnosed under the headings of primary focus, calcified bronchial glands, hilum calcification, peribronchial infiltration, enlarged bronchial glands, increased bronchial markings, parenchymal tuberculosis, thickened interlobar pleura, thickened apical pleura, and negative.

#### CONTACT AND NONCONTACT HISTORY

The history of definite exposure to and contact with tuberculosis was ascertained as accurately as possible. It is evident that the greatest source of error is found in the so-called noncontact case, owing to our inability to check this point in chil-

\* From the University of California Medical School and the George William Hooper Foundation for Medical Research, San Francisco.

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dren beyond the nursery age. For practical purposes, however, this division into two groups may be of interest if it be not of definitely proved value.

#### INTRADERMAL TUBERCULIN TESTS

Comparative tests were made with human old tuberculin and tuberculin fraction, using a fixed dilution equivalent to 0.1 milligram of tuberculin substance. Suitable controls were made with salt solution and culture media from which the tuberculins had been prepared. The simultaneous injections were observed at twenty-four, forty-eight and seventy-two-hour intervals, and in most cases until the visible skin reaction had disappeared. The areas were measured and the degree of infiltration and reddening noted. For roughly quantitative purposes the reactions were classified as follows:

A. Doubtful test, with area less than 0.5 by 0.5 cm. without reddening or infiltration and fading within twenty-four hours.

B. Slightly positive test, with area 0.5 by 0.5 to 1.0 by 1.0 cm., without definite reddening or infiltration or with slight reddening only and persisting twenty-four hours.

C. Moderately positive test, with area 1.0 by 1.0 cm. with slight to moderate reddening and infiltration and persisting forty-eight hours.

D. Strongly positive test, with area 2.0 by 2.0 cm. or more, with profound reddening and infiltration and persisting more than forty-eight hours.

Negative—areas too small and too transitory to be considered under the doubtful Group A.

The skin reactions were classified further with reference to agreement or disagreement of the comparative tuberculin and fractional tests. Five subdivisions were made:

1. Old tuberculin negative, and fraction positive.
2. Old tuberculin positive, and fraction negative.
3. Old tuberculin same as fraction.
4. Old tuberculin weaker than fraction.
5. Old tuberculin stronger than fraction.

In each of these groups the preceding grades of reaction (A, B, C, D, negative) were noted, so that every possible relation of one test to the other might be visualized.

We were able in the majority of patients to study comparative reactions for two to three years and in a considerable number for four years.

#### SUMMARY OF RESULTS

*Bronchial Gland Tuberculosis.*—There were thirty-nine patients in this group which included twenty-seven contacts and twelve noncontacts. Clinically this group represented a healed condition to which thirty-one cases belonged definitely, under the heading of healed bronchial gland tuberculosis without any other manifestations. Of the contacts, in fourteen, old tuberculin gave a stronger reaction than the fraction, six the same, five weaker than the fraction, and two positive when fractions were negative. In this last group one patient was clinically normal and had enlarged bronchial glands with some calcification, and the other had enlarged but not indubitably tuberculous glands. Of the noncontacts there were seven with old tuberculin stronger than fraction, and five

with the same reaction as fraction. In the healed group without other manifestations in which the old tuberculin reactions were stronger, there were eleven contacts and five noncontacts. In these sixteen tests fourteen were strong, eleven falling in the D classification, whereas the fractional tests ranged from doubtful (two) to weak (seven). The results showed eighteen tests definitely or strongly positive when the fractions were doubtfully positive, weak, or negative. When old tuberculin and fractions gave similar results there was agreement in eight cases. In the group of reactions with fraction giving a stronger test than old tuberculin, five fell in the clinical subdivision of definitely healed bronchial gland tuberculosis without other manifestations, and of these tests three were dubious and two, weak.

*Tuberculous Cervical Adenitis, Healed Primary Focus, Tuberculosis of Bones.*—In a group of twenty-five cases with definite evidence of tuberculous infection and healed tuberculous disease, there were eight tuberculous cervical adenitis, six tuberculosis of the bone, and eleven healed primary foci. Old tuberculin gave a reaction in all but four of twenty-five cases, medium or very marked reactions, and the fraction gave in eleven cases a medium or strong reaction. Concerning a judgment regarding tuberculous infection, the reactions with old tuberculin showed a satisfactory correlation of the tests and clinical data. From the standpoint of clinical activity or disease the fractions appeared to outweigh the old tuberculin as a diagnostic agent. Similar results have been obtained in another series of more than one hundred patients with healed primary foci and tuberculous cervical adenitis.

It would appear from our observations that a diagnosis of healed tuberculous cervical adenitis or of a healed primary focus in the lungs cannot be made with certainty in the absence of a definitely marked positive reaction to old tuberculin.

*Enlarged Bronchial Glands.*—In this group were considered:

- A. Enlarged bronchial glands with positive old tuberculin.
- B. Enlarged bronchial glands associated with healed bronchial gland tuberculosis.
- C. Enlarged bronchial glands associated with tuberculous cervical adenitis.
- D. Enlarged bronchial glands associated with healed peribronchial tuberculosis.
- E. Enlarged bronchial glands associated with phlyctenular processes.
- F. Enlarged bronchial glands associated with bone tuberculosis.
- G. Enlarged bronchial glands associated with small calcifications.

In this group sixty-one of the seventy-two cases were negative for clinical signs of tuberculosis and of these, nine gave complaints such as lassitude, fatigue, and the like. The reactions in this group were as follows: Old tuberculin was greater than the fraction in seventeen cases; old tuberculin was positive when the fraction was negative in ten cases, or a total of twenty-seven (44.2 per cent) in which the old tuberculin test was pre-



dominant. Of these twenty-seven tests seventeen were moderately to very strongly positive (C-D). In contrast, five tests with the fractional tuberculin were weakly positive (B) and six doubtful (A) and six moderately strong. The fraction was stronger than old tuberculin in twelve cases and of these six were doubtful, five weakly positive, and one moderately positive.

It is significant that the fractions did not give negative tests when tuberculin was positive in cases with symptoms that might be construed as those of tuberculous activity.

*Non-tuberculous Pulmonary Disease.*—There were fourteen cases in which old tuberculin gave either a greater reaction than the fraction or was positive when the fraction was negative. Sixteen cases of twenty-two in the entire group were non-contacts, among whom were ten with old tuberculin predominating or positive when the fraction was negative. When old tuberculin was stronger, reactions with fractions were doubtful in five instances (A), slightly positive (B) in two, and by contrast the old tuberculin reactions were marked (D) in three cases, definitely positive (C) in one, and slightly positive (B) in three.

In all the cases where fractions gave reactions equal to old tuberculin, showing medium or strong reactions, or in the cases where fractions gave medium to strong tests and old tuberculin at the same time gave weak to doubtful results, symptoms and signs were present in the history that might have been attributable to tuberculous activity. This, we believe, would appear to be of some significance.

*Clinically Normal Group.*—This group was divided into (a) clinically normal without pathologic changes, but with a positive tuberculin test; (b) clinically normal with small hilum calcifications and positive old tuberculin; (c) clinically normal with definite signs of healed tuberculous disease.

Ten out of twenty-five of this clinically normal A group gave greater reactions with old tuberculin than with fractions, and in two cases in addition, positive tuberculin tests were obtained, when fractions reacted negatively. It may be noted that in this group of twelve, seven were contacts and five noncontacts. In the entire group of twenty-five, fourteen were contacts and eleven noncontacts.

B group: Five out of eleven gave a greater reaction with old tuberculin than with fraction and in addition three cases were positive when fraction was negative. In this group of eleven, two cases were contacts and nine noncontacts, and in the group of eight reactors, one was a contact and seven were noncontact.

C group: Four out of seven in this group gave a greater reaction with old tuberculin than with fraction. In this group of four, one was non-contact and three were contact.

The clinical group as a whole, numbering forty-three cases, was divided almost equally between contact and noncontact patients, there being

twenty-two of the former and twenty-one of the latter.

Inasmuch as this group comprises cases with tuberculous infection but without any active process, the marked old tuberculin reaction gives information that is not consistent with the clinical picture. We are more concerned in a group of this type with the relation that the test might bear to the significant clinical data. In this connection the lesser reactivity of the tuberculin fraction might appear to have more significance, particularly when negative results are more informative.

*Negative Tuberculin Test.*—In this group of seventeen cases with negative old tuberculin reactions, ten were likewise negative with fractional tuberculin. Of the remaining seven, three gave a doubtful test, two a weakly positive, and two (contacts) gave a strong reaction. In addition these two patients showed a record of a positive old tuberculin test in the previous history. In all these cases symptoms and signs were present suggesting a possible old infection.

*Pulmonary Tuberculosis and Peribronchial Tuberculosis.*—In these groups, numbering twenty patients, no special differentiating characteristics of the test substances could be discerned. However, since these groups were too small for detailed study and correlation it did not seem advisable to draw any conclusions. In our opinion the value of a comparative study with the test substances under consideration can be better determined by devoting attention to the clinical groups of patients that present vague or indefinite clinical conditions that might be mistaken for tuberculosis.

#### DISCUSSION AND SUMMARY

In the evaluation of comparative skin reactions for tuberculosis two points might be considered: first, the diagnostic value in relation to tuberculous infection, and second, the relation to clinical disease. The supposition might be made that a strong test is to be associated with clinical activity and the weak or negative one be not so associated. The diagnostic superiority of a test would appear to rest in its ability to give a stronger reaction where only clinical disease existed to the exclusion of any cases with old, healed foci. As a corollary to this point, when a strong reaction with old tuberculin might lead one to believe that a weak reaction is valueless, the fractional tuberculin in such a case might give better information because the correlated results tend to show that nonclinical tuberculosis may be differentiated from tuberculous disease. In our experience the fractional tuberculin has never failed to give unequivocally positive results in definite tuberculous disease.

Three hundred and forty-six tuberculous and nontuberculous patients, ranging in age from seven months to sixteen years, have been studied with a view to comparing tuberculin reactions with specially prepared fractions of tuberculin. The cases have been divided into various groups to test more rigorously the diagnostic value of the tuberculin fractions. To this end, borderline groups

presenting unusual difficulty in diagnosis were selected. Stress was laid particularly upon healed infections. The chief differences in the reactions in those cases pointed to lesser reactivity on the part of tuberculin fractions in latent conditions in which old tuberculin gave moderate or marked reactions. The results indicate that a diagnosis of healed tuberculous cervical adenitis or of a healed primary focus cannot be made with certainty in the absence of a definitely marked positive reaction to old tuberculin.

Tuberculin fractions did not give negative tests when old tuberculin was positive in cases having symptoms that might be considered as those of tuberculous activity. In all the cases where tuberculin fraction gave reactions equal to those with old tuberculin when it showed medium or strong tests, or in cases where the fraction gave medium to strong and old tuberculin at the same time gave weak to doubtful results, symptoms and signs were present in the history that might have been attributable to tuberculous activity.

From detailed analyses of the different tuberculous and nontuberculous groups presented it can be concluded that the tuberculin fraction (T. E.) gives better results than old tuberculin, and is more selective as a clinical test.

In a clinically normal group equally divided between contact and noncontact patients with tuberculous infection but without any active process, the marked old tuberculin reactions gave information that was not consistent with the clinical picture. In these instances the lesser reactivity or negative results with the tuberculin fraction might be more significant, particularly when negative results are more informative.

Further studies of the type here presented are now under way, but at this writing lack the correlation necessary to enlarge these groups.

Note: Complete data will be published at a later date.

University of California Medical School.

#### REFERENCE

1. Proc. Soc. Exp. Biol. & Med., 1926, 23, 508; Am. Rev. of Tuberc., 1926, 13, 454.

#### DISCUSSION

CHESLEY BUSH, M.D. (Arroyo Sanatorium, Livermore).—This is certainly a praiseworthy attempt to evaluate the clinical usefulness of a tuberculin fraction prepared from a nonprotein culture medium. The difficulties of making such a test are tremendous. Our knowledge of tuberculosis in children is as yet too hazy to admit of rigid classifications, and although Koch's old tuberculin has been on the market for over a quarter of a century, we are still doubtful about its interpretation in many cases.

Attempts to produce a substance that will indicate clinical activity rather than simple infection have been numerous in the past few years, but all disappointing. Such a substance if reliable would be of infinite help.

✱

F. M. POTTINGER, M.D. (Monrovia).—As a result of immunological studies we are now beginning to obtain a more accurate idea of the nature of clinical tuberculosis. The clinical picture and the underlying pathologic changes are all due to the interplay between the bacilli, on the one hand, and the cellular response of

the patient, on the other hand. The various tuberculins more or less crudely represent that portion of the tubercle bacillus which is responsible for the sensitizing and immunizing mechanism which is set going by a tuberculous infection. Believing that it would be advantageous if the particular activating principle could be isolated, Long and his coworkers have been working on this for some time, and have produced a tuberculin by growing bacilli on a nonprotein medium, thus eliminating the protein of the culture fluid in Koch's original preparation. They have also isolated a water-soluble protein, which they have found to have the antigenic principles of tuberculin.

In my own work with the tuberculin reaction, which now extends over many years, I have found that the skin sensitivity upon which the reaction depends differs greatly in people according to their particular condition. The immunity reaction in tuberculosis is relative, and oscillates up and down. Sometimes it is much higher than at other times. Sometimes it entirely vanishes, even with patients who at the time harbor active infection. Theoretically it should be increased by each reinoculation, and it is the reinoculations that make activity in tuberculosis. This means that different individuals develop different degrees of immunity, hence show different degrees of sensitization and react differently to the same dose of antigen, even though their diseases be qualitatively and quantitatively much the same. It does not seem possible that uniformity of results can be expected so long as individuals react differently to the same degree of infection, unless there is some certain tuberculin fraction the presence of which is due alone to activity. The difficulty of determining such a fact is surrounded by many difficulties. Just when a tuberculous focus is throwing out tubercle protein cannot be established by any of our present methods of examination. This must be evident to all of those who have the opportunity of studying patients suffering from chronic tuberculosis over a long period of time. Small lesions in some will give marked symptoms that produce a definite clinical disease. Large lesions in others will produce no symptoms that are recognizable. It seems to me that herein lies one of the difficulties surrounding the very thing that Doctor Eberson and his coworkers are trying to establish. If, however, they are able to isolate a principle from tuberculin that will differentiate active tuberculosis from latent and inactive lesions they will advance diagnosis far beyond what it is today, and particularly in the group of childhood and early juvenile tuberculosis. It is particularly in this group that some such method is needed.

✱

A. L. BRAMKAMP, M.D. (Banning).—This work of Doctor Eberson is in line with present-day thought and effort to determine more definitely the composition of the tubercle bacillus, and the part each constituent may play in the pathology of tuberculosis. Not that such thought and effort are new, for the almost innumerable tuberculins are evidence to the contrary. Recently, however, varied applications of the methods of biological chemistry have been giving us increasing understanding in the matter.

With a fuller knowledge of the chemical composition of the tubercle bacillus, a separation of the various constituents in pure form, and the determination of the action of each gives interesting information, and perhaps practically helpful means of diagnosis and treatment may be obtained. That the perfect antigen will be found in a single constituent or set combination of constituents of tuberculin, is almost too much to hope for. In this connection it is pertinent to recall that other substances (*e. g.*, sodium succinate and gold compounds) are used with the same purpose and effect as tuberculin, namely, to bring about an inflammatory reaction, specific or nonspecific, at the focus of disease. Doctor Eberson's work concerns itself largely with tuberculin fractions as skin-test agents (prepared from tubercle bacilli grown on nonprotein media: an alcohol insoluble fraction, an

ether insoluble fraction, and an ether soluble fraction).

A number of years ago considerable interest was aroused by the Much-Deycke partial antigens, which were intended for therapeutic use after skin-testing with each to determine the particular respects in which resistance or immunity of the patient was lacking. Much separated four partigens: one, the water-soluble toxin, and three partial antigens; one, fatty acid lipoids soluble in alcohol; one, neutral fats soluble in ether, and an albuminous residue insoluble in its nature. This conception and practice of Much-Deycke never had great acceptance, and at this time we hear no more of it.

Nevertheless if these different views and efforts are not substantiated in full, they have at least a measure of value and help to point the way for future investigation.

Doctor Eberson's work is being followed with great interest, and we are hoping for real advances in diagnostic methods as a result of his efforts.

✱

DOCTORS EBERSON and WOLFF (closing).—The discussions have covered the topic so thoroughly that our sole addition to them must be a word of appreciation to Doctors Bush, Pottenger and Bramkamp.

It is frankly admitted that such an important problem as is indicated here cannot be solved in the short time—almost five years—which we have thus far devoted to this clinical experimental investigation. However, it will be shown in our paper when it is published in full that a detailed clinical analysis of nearly 350 cases may be made more convincing when the material is evaluated by correlation and comparative studies.

We feel with Doctors Pottenger and Bush that there is great need for a preparation of tuberculin capable of differentiating active from latent and inactive tuberculous lesions. Although our results suggest that such a substance may be obtained, we are primarily interested in showing by comparative tests that the old tuberculin is certainly less efficient than the tuberculin fraction (T. E.) as a diagnostic agent.

That there have been and are now being produced numerous substitutes for old tuberculin is a healthy sign. What has been lacking, however, is a comprehensive study of clinical material with the newer preparations. We believe that several hundred patients studied thoroughly, and with the clinical and laboratory data properly analyzed, will give as cogent a demonstration as several thousand patients. Larger series over many years will naturally add confirming or refuting facts, but a scientific analysis of even a small group of cases can tell much.

The therapeutic value of tuberculin prepared from nonprotein culture media is suggested naturally. We have already had some experience with the T. E. (tuberculin fraction) in tuberculous choroiditis, resulting in a complete cure when old tuberculin, used similarly had failed to alter the clinical picture. Such a series would be of value, particularly when the therapy has been followed carefully in the eye clinic.

From the point of view of sensitization to the tuberculin product, it is important that we distinguish between specific and nonspecific reactions following repeated injections of substances containing tuberculin along with proteins from culture media. This criticism cannot be applied to the use of "synthetic" nonprotein media in which the products of tubercle bacilli are elaborated without reference to foreign proteins. In this instance sensitization that might develop from repeated injections of T. E. would indicate a specific response to the bacillary substances. Only in this sense, therefore, could it be correctly stated that sensitization to tuberculin might occur.

## THE INDUSTRIAL PHYSICIAN—HIS RELATION TO PATIENT AND CARRIER \*

By JAMES EAVES, M. D.  
San Francisco

DISCUSSION by C. A. Dukes, M. D., Oakland; Otto R. Frasch, M. D., San Francisco.

IN industrial practice the physician or surgeon at all times is under the most critical scrutiny. He must satisfy patients, employers, insurance companies, and always be prepared to prove the correctness of his treatment. The industrial surgeon is a necessity; and industrial surgery is a specialty in itself.

### REQUISITES OF AN INDUSTRIAL SURGEON

Besides the requisite surgical training the industrial specialist must have an abundance of tact, patience and understanding. He must be far-sighted enough to realize that, although he is paid by the insurance companies, his success is dependent in the last analysis, not on the organization which pays him, but on the individuals who receive his services. He must satisfy both, but primarily he must satisfy his patients. He must be meticulously careful in his treatment of industrial cases, realizing always that the industrial patient is practically forced to accept his services, and usually accepts them in the expectation of getting second-rate treatment.

The patient tells his fellow employees, the organization for which he works, and the insurance company what he thinks of the services rendered, whether he received good or bad treatment at the hands of the industrial surgeon. Cumulatively these opinions will make or mar a surgeon's reputation. No employer or insurance company will send cases to a surgeon who consistently is given the reputation of rendering unskillful or roughshod service, technically or psychologically.

### INDUSTRIAL ACCIDENT ACT OF CALIFORNIA

Although the Workman's Compensation Law of the state of California places a limit on the amount of compensation allowed an injured workman, it places no limit on the cost of duration of medical service to be rendered. The law in regard to the furnishing of medical, surgical and hospital treatment is liberal, but there is nothing of charity in its liberality. Efficiency of manpower is as essential to society as it is to any given industrial enterprise. In general the greater the efficiency the greater the production of goods in any industrial or social organization. Economically and socially, therefore, it is of practical value to society to insist on a prompt return to work of the thousands of workmen injured in the state every year.

The prompt return to work of injured employees can be brought about only by efficient medical and surgical service. But it has become apparent that doctors as individuals must train

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themselves in human understanding, sympathy, insight and tact in order successfully to handle the various phases of industrial accident treatment with satisfaction to all parties. So much depends upon the study of human nature in the individual patient that no code of rules can satisfactorily meet the needs. The element of neurosis inherent in so many who are injured and so easily evoked by improper handling requires the greatest care in the selection of those who are to treat or come in contact with the injured. The theory is applicable all through the treatments. It applies to treatment by claim adjusters as well as by surgeons. It applies equally well to treatment of family and friends of the injured. It might be summed up as ability to inspire confidence, in your surgeon, your technician, one's self, and the future.

#### SUCCESSFUL INDUSTRIAL SURGERY

Industrial surgery must be practiced on a large scale in order to be successful. Although the fees are paid in cash and are paid promptly they are lower than those paid in private cases. The overhead expenses for medical personnel and equipment are far higher than would be necessary in private practice. Here and there a physician or surgeon seems to desire industrial practice because he assumes it is an easy method for him to pay his rent and overhead. Other surgeons seemingly enter the field of industrial practice for supposed easy money, and make of it an ordinary commercial business, forgetting that the workingman has a right to be treated honestly as a patient, and that the employer and insurance company also have very definite interests.

#### WHAT INSURANCE CARRIERS DESIRE

It might be well to set down briefly what insurance companies demand, and, very properly, get from the modern industrial surgeon equipped to meet the demands of this type of practice:

1. Prompt detailed reports to the company; by telephone in serious cases. The surgeon's report is usually the first received. It must fully answer all questions in first report forms.

2. If a definite diagnosis or prognosis cannot be made within twenty-four hours a supplementary report should follow at the earliest moment when a definite decision is arrived at. Many surgeons wonder why cases are transferred? If a surgeon seems reluctant to report cases it appears to the insurance company either as evidence of fear that he will not be considered competent, or as an effort to "cinch" retention of the case regardless of the company's wishes.

A specialist may be desired in emergencies or otherwise and the insurance company is entitled to the opportunity to say so. If in doubt at any time call the insurance company.

3. Be sure the case is compensable. If in doubt communicate with the insurance company immediately.

4. If possible always have an order from the employer authorizing treatment.

5. *Disability Estimates.*—Insurance companies want the facts, not excessively optimistic reports;

the truth is of more value. Subsequent reports are very essential especially when first estimates have to be changed. When a patient is instructed to return to work immediate notification should be sent to the company.

*Estimates.*—Under the law, before compensation is paid there is a waiting period of seven days, compensation commencing on the eighth day. Insurance companies are not interested in the waiting period, but if complications arise it is to their direct interest to be immediately acquainted. Notify them at once if the original estimate is extended. This is important to insurance companies because the law compels them in all cases to establish reserves to meet incurred future payments. The estimated period of disability and treatment must be as exact as possible.

Exaggerate your period of disability rather than minimize. You cannot curry favor with insurance companies by low estimates and poor results. The companies would far rather be able later to reduce an estimated outstanding reserve than be compelled to increase it.

Do not state that estimated disability "varies." The insurance companies want a definite opinion as to the estimated disability. A surgeon cannot always be correct, but one whose average estimate of disability is close is appreciated by an insurance company.

6. *Send Reports Promptly.*—Remember insurance companies are charged with prompt payment of compensation and delays can usually be traced to nonreport by the attending surgeon or to vagueness of a report rendered. This does injustice to the workingman and reflects upon the service of the insurance carrier.

7. *Consultants and Transfers.*—If you believe a consultant is necessary communicate with the insurance company for approval.

Consultations should be encouraged by the industrial surgeon. You must not avoid them, and the insurance companies do not wish you to avoid them. They frequently are their safeguards.

#### DISAGREEMENTS WITH INSURANCE CARRIERS

Insurance companies and doctors often are at loggerheads. Why? The doctor does not give the cooperation to insurance companies that he does to private patients. He ignores them. With private patients he discusses procedures; why not with insurance companies? The surgeon should have the confidence of the insurance company that chooses and pays him.

If a company asks you to transfer a patient to another surgeon who usually is their chief surgeon, do not refuse or be perturbed. There is usually a very good reason from the carrier's standpoint for the transfer, and no reflection on your ability is intended.

#### FEAR PSYCHOLOGY IN PATIENTS

In industrial surgery "fear psychology" or whatever you like to call it, is an important consideration in the treatment of patients. In back injuries, for example, do not discourage a man or

add to his mental infirmity by telling him what an extended disability he will have. Back injuries from experience are of uncertain duration and serious harm is often done by an attending surgeon who goes into too much detail about an injury of a trivial character.

How often do you see compression fracture of vertebrae or markedly displaced fractures of transverse processes heal with a very low permanent disability in cases where the encouragement of neurosis has not been fostered by injudicious medical advice? In cases of a simple crack of a transverse process, patients after being informed of these facts have given up and become cripples for life; whereas others with severe and displaced fractures have returned to work in a few months. Do not add to the mental infirmities or fears of any patient. Avoid all unnecessary casts, tailor braces, and other apparatus, unless there is very strong indication for their use.

8. *Medical Expenditures.*—Do not make a practice of having patients come in day after day unless a redressing or personal observation is absolutely necessary. This adds unnecessary costs. If clinically there is no evidence of fracture do not burden the company with additional costs of x-rays.

An x-ray, because of poor quality, from which a diagnosis cannot be made, is not an x-ray, and charge should not be made therefor. Lack of technique or errors on the part of the attending surgeon or x-ray technician are not a basis of charge against an insurance company.

9. *Special Examination and Special Reports.*—For general use the following outline is of benefit:

1. Description of original injury: Carefully and completely diagnosed.
2. Present condition: Picture of condition today with reference to original injury—what progress can be definitely noted.
3. Future prognosis: Relation of condition today to end-result. What additional progress is reasonably certain and what is problematical.
4. Type of treatment indicated.
5. Period of disability and treatment.
6. Permanent disability—amount, if any.
7. Record of present rating: Compare present physiotherapy reports with report made on entrance to physiotherapy department.
8. Contributory factors: Arthritis—preëxisting. Constitutional conditions, etc.
9. Conclusions.

Some doctors think they are creating good will with insurance companies by getting the patients off their books and back to work before they are ready to go. Cases thus treated only add to permanent disability costs.

Classical operations should not be performed if in their very nature they are obviously experimental.

#### VALUE OF PHYSIOTHERAPY

It is reasonable to expect that the advanced surgical procedures for rehabilitation, and associated treatment, now in vogue would increase medical costs, but if these procedures are justified, compensation payments, including permanent disability

awards should be reduced accordingly. On the contrary, these costs have risen. What is the explanation? In no small measure it is due to an abuse, as an easy source of income, of wartime procedures such as physiotherapy, and purely experimental operations that do not always produce results. Physiotherapy must be intelligently applied. Work therapy is better than any physiotherapy if the patient is capable of doing the most menial labor.

The value of physiotherapy was confirmed by results in treating war invalids when surgery alone was found not to be always sufficient. Many special physiotherapy institutions were organized throughout Europe and the United States. If its use was indispensable during the war, in time of peace physiotherapy can be also of great help in treating injuries of all kinds including industrial injuries. The value of this additional line of medicine can be appreciated only by those who have observed the results achieved.

Physiotherapy is employed (1) to increase blood supply in parts affected, improve the circulation, nutrition and metabolism, to absorb infiltrations and effusions and quicken restoration of tissues to normal; (2) to build up muscles that are weakened from disuse after immobilization of fractures, etc.; (3) to reduce or lessen stiffness of joints following long application of splints or after joint injuries; (4) to stimulate nerves if they are in a state of paresis due to injury; (5) to combat infection.

According to conditions diagnosed different means of physiotherapy treatments are applied, alone or in combination.

Galvanic and faradic currents are also used for diagnostic purpose, for nerve and muscle-testing in peripheral and some central nerve lesions. The reaction of degeneration can be made, the diagnosis and prognosis indicated, and malingering exposed.

In nerve injuries a combination method of radiant heat, massage, electricity in form of diathermy and interrupted galvanic and faradic currents is used to prevent accompanying atrophic, sclerotic, and fibrous changes and to help to regenerate the structures affected and prevent permanent stiffening and ischemia. This method gives very satisfactory results; for instance, in facial palsy, if started soon enough after the injury.

For the union of fractures, stimulating technique is in order.

For the chemical effects of ionization the galvanic current is used.

In industrial medicine one has to deal with infections and skin diseases, occupational or otherwise. This is a field for actinotherapy. Radiant light and heat from carbon filament lamps will destroy many germs. Ultra-violet rays destroy all bacteria and fungi after a short exposure. For this a water-cooled quartz lamp is used locally with pressure to produce anemia and to enable ultra-violet rays to penetrate. Simultaneously with the local treatment general radiation with an air-cooled lamp gives better results by producing

various chemical changes in blood, by increasing the leukocyte count and calcium content, as has been proven by experiments. Staphylococcal infection yields readily to ultra-violet therapy, as in furunculosis or infected lacerations. The air-cooled lamp is used alone in cases of secondary anemia or malnutrition, as in lead poisoning; or may be used in conjunction with iron and arsenic injections.

The above outlines briefly some of the uses of physiotherapy in industrial medicine. Injudicious or protracted use of physiotherapy or use of it without a diagnosis should be condemned.

To control the effects of physiotherapy on patients, we use the following scheme:

Patient is first examined and diagnosed.

The findings are expressed in the form of physiotherapy report on special physiotherapy report blanks, corresponding to the part of the body that was injured.

Patients are examined periodically and progress is similarly noted.

Treatment is stopped when there is no further progress.

#### CONCLUSION

It is incumbent upon our Industrial Accident Commissioners and those associated with them to uphold the law and protect the interest of the workman. It is also our duty as members of our profession to protect them. Our efforts must not be selfish or show any attempt to curry favor with insurance companies. We must live up to the ideals of our profession and work to maintain its reputation. We must be most concerned with the recovery of the patient as a matter of professional endeavor, over and above any provisions of the law.

An employer should seek the best medical or surgical attention. An employee does not gain by injury, but rather loses his earnings in excess of his compensation; and his family are deprived of income, and therefore suffer with him. The employee knows that when injured he quickly goes into debt because of the loss of his earnings and income, and therefore he is anxious to be restored to health as a wage-earner and be able to fulfill his duty as a provider and avoid becoming a burden on the community.

Insurance companies and employers are interested in results. Get the injured back to light work, but not to the detriment of the injured. Employer's rates are influenced by losses. Your care of the man is not a special privilege for you. The Workmen's Compensation Act was not created for the benefit of the medical profession or others that might benefit under it, but for protection of the workman, and is today subscribed to wholeheartedly by all intelligent employers. Insurance company adjusters are not ordinarily medical men. They are interested in the results obtained by whatever treatments are adopted. In medico-legal problems, whether in court or before the Industrial Accident Commission, know your subject and speak the truth without bias.

Do not violate the ethics of the profession by accepting rebates or cutting rates. This will not be asked if the doctor is giving value received, because statistics show the best service is the most economical.

Whether a patient be a private patient or under the jurisdiction of the Industrial Practice Act we must not have two methods of treatment. Treat both alike. We cannot have two kinds of manners. The patient comes first. Wait on him, serve him and rehabilitate him as a wage-earner.

Efficiency in medical industrial practice cannot exist without regulations. Insurance companies' "paper work" and their requests are tiresome and at times irritating, but they are necessary nuisances.

If you wish to pursue industrial practice realize not only that efficient surgical service is demanded, but that the paper work is also required. Writing reports does not make an industrial surgeon.

The five major requirements for an industrial surgeon are:

1. To treat a patient as a man, and act as man to man.
2. To have a thorough knowledge of the Compensation Act.
3. To have an accurate knowledge of insurance regulations.
4. To have real surgical ability and equipment.
5. To obtain good results; for apologetic explanations are not wanted in industrial practice.

A physician or surgeon who would make a success of the exacting practice of industrial medicine must specialize in the work attempted, and must give sympathetic and understanding care. These are now conceded to be the fundamentals in industrial practice.

560 Sutter Street.

#### DISCUSSION

C. A. DUKES, M.D. (426 Seventeenth Street, Oakland).—Doctor Eaves, in his paper on "The Industrial Physician—His Relation to Patient and Carrier," has discussed a very interesting and timely subject.

Under requisites of an industrial surgeon, Doctor Eaves aptly states that the social status of the patient should not have any bearing upon the type of treatment nor the manner of treatment. The surgeon's equipment should be of the character to give the most modern and best treatment available for the conditions for which the patient must be treated. The untidy surgery may not necessarily be dirty, but certainly is not to be compared to the modern bright room with its tile floor and shiny equipment.

I am glad to have him speak of the type of men who today are doing industrial surgery. They are alert, energetic, and thoroughly qualified. Many of us can remember the old-time industrial surgeon who handed out the black pills from an untidy office, giving very little thought to diagnosis or the patient's general condition.

In speaking of the amount of work necessary to make an industrial surgeon financially successful he again emphasizes the success of group medicine because, in handling a large industrial practice, it is necessary to employ or have associated with you a varying number of assistants whose work should be directed by a head whose ability is unquestioned and whose personality lends confidence to those placed under his care.

Another of the points made in the paper is the necessity for accurate and prompt clerical work. The



average physician is not a good clerk; consequently, if he is to do much industrial work and keep his reports properly cared for, it is necessary to have a trained clerical force. Both the nurse and stenographer will require definite training in this type of medical reports.

I am glad the doctor has brought out so well the relationship which should exist between the insurance carrier and the doctor, and also his responsibility to the state.

Physiotherapy should be carefully studied not only as regards apparatus, but as to psychological factors that are necessary to return confidence in the injured employee as to his future and his ability to return to the labor for which he is fitted.

Further emphasis will not be amiss on the fact that an industrial surgeon is no different from any other surgeon excepting in the classification of the work with which he will come in contact. He must be thoroughly trained, a hard worker, and have the mental equipment necessary to handle people of meager education.

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OTTO R. FRASCH, M. D. (315 Montgomery Street, San Francisco).—The Workmen's Compensation Act holds the employer liable for compensation and medical care for all injuries sustained by his employees in the course of and arising out of their employment. In nearly all cases the employer's liability is assumed by an insurance carrier. Since the insurance carriers are thus obliged to furnish and pay for medical aid and for any temporary or permanent disability incurred, it is natural that they should have a considerable interest in the medical status and treatment of the cases for which they are responsible. It is essential that the surgeon should keep the insurance carrier promptly and fully informed of the medical aspects of the case so that the insurance carrier can properly pass on the claim, set aside the proper reserve for the injury and, if it so desires, arrange for further medical service by specialists or by consultation, etc. Doctor Eaves has described in detail the essential points to be covered in such reports.

The idea seems to prevail in some quarters that insurance carriers are interested only in securing the cheapest possible medical service. This is probably a hold-over from the attitude toward the old style company doctor, whose work in many cases was of a very perfunctory nature. Since, however, insurance companies are obliged to pay the injured employee's compensation for the period of his temporary disability and are often obliged to pay large sums for permanent disabilities, they have learned that in most cases "cheap" medical service is costly. Their interest is in the total cost of a case, including compensation for permanent disability if any, compensation for temporary disability and medical costs. Considered from that viewpoint, there is no conflict between the interest of the injured man, the insurance carrier and the surgeon, who is sincerely interested in rendering the best possible service. As a result of the Workmen's Compensation Act, which definitely fixes liability for temporary and permanent disabilities, we for the first time have a definite check on the end-results of different types of treatment for various types of injuries in a large series of industrial accident cases. The results are tabulated and compared; and the methods that experience has proven the better are adopted, the poorer methods dropped. Insurance carriers are also filing their experiences with the different surgeons who do their work, and there is a natural tendency to prefer the surgeons who secure the best results. The first great requisite for the industrial surgeon is, of course, surgical judgment and skill. I should like to stress also the importance of coöperation: coöperation with the employer in rendering prompt service to injured employees that they may be returned to work as soon as possible; coöperation

with the injured man that his confidence will be maintained and his morale sustained—an important factor in many types of industrial injuries; and coöperation with the insurance carrier that he may better fulfill his obligation to employer, doctor and injured employee.

## THE LURE OF MEDICAL HISTORY

CLAUDE BERNARD

By JEAN OLIVER, M. D.  
San Francisco

DOUBTLESS the preacher spoke from the depths of a profound knowledge when he lamented, "There is no new thing under the sun." For when we seek the origins of even the most miraculous of our modern inventions, the deeper our study goes the less able are we to pick out from the countless numbers who have labored at the edifice of mankind's achievement any few whose contribution was more than a tiny addition to the work of his predecessors. Occasionally some fortunate one places the final and perfecting touch to that which has been laboriously prepared and the world, astonished, hails a creator.

But these are, in the stricter sense, the lesser heroes of mankind's advancement. Many are the hands willing, if the METHOD be shown, for with a method results must fall to the industrious and to the fortunate. Behind these men, whose names and images are in every mind, stand others of whom we think less often, perhaps because their work, not so obvious in its immediate results, requires for its appreciation more attention than the rush of today's busy life affords. These latter are they who turned the course of man's endeavor into new and fruitful fields and who showed the gleaners where the harvest was richest. In medicine, such a one was Claude Bernard.

Medicine had advanced, halting at times, but always forward, and at each step we see the result of some new method. The first formulations of the Greek physicians that were guided by classical philosophers; the dubious gains of the medieval school soon lost in the maze of dialectic and logic; the breaking of these chains by the new humanities of the Renaissance, this promise only to fall into the sterile finality of the systematists. During all these years the clinician, from his post at the bedside, had observed, described and deduced to the limit of human acuity. The anatomist had exhausted the wealth of gross pathology and though Virchow had only begun his application of the microscope to the study of morbid structure, this method, too, could only hope to approach a similar limit. Bacteriology was to add tremendous gains in its restricted field. The new chemistry and physics awaited a method of application to vital phenomena.

Such had been the course of the acquisition of medical knowledge when in 1865 there appeared "L'Introduction à L'Étude de la Médecine Expérimentale." The new era was established.

Medicine of today is experimental medicine, not only in the laboratory but in the clinic and at the

## CLINICAL NOTES, CASE REPORTS AND NEW INSTRUMENTS

### INGUINAL HERNIAS CONTAINING FALLOPIAN TUBES\*

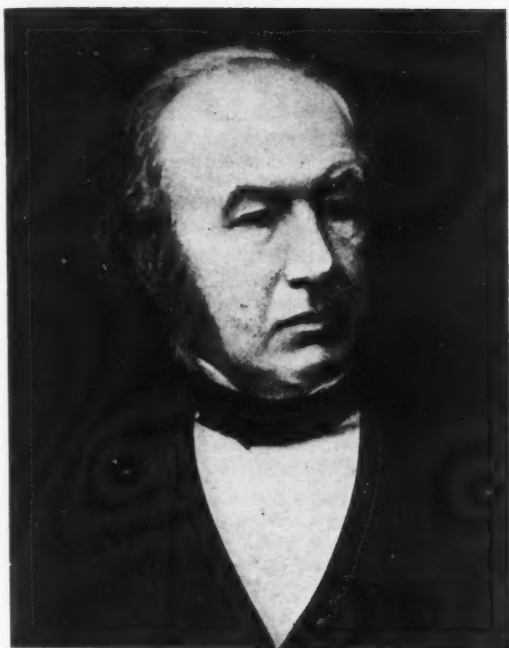
CASE REPORT

By ALANSON WEEKS, M. D.

AND

G. D. DELPRAT, M. D.

San Francisco



CLAUDE BERNARD

bedside, and if this fact is not recognized by some, it is because the experimental method has become such an intimate part of our intellectual mechanism that, like the action of our vital organs, we no longer feel its functioning.

It is the revelation of these mental processes whose significance we do not appreciate, that makes a reading of Bernard's book so fascinating. Experimentation had of course been used from the time when man first discovered that sticking a burnt finger into cool mud was a more soothing procedure than some other, but the *method* of its use had advanced remarkably little from this primitive origin until Bernard. Galen and the Alexandrian schools had performed their "vivisections," and throughout the whole development of medicine isolated experiments had borne fruit, but in "L'Introduction" we find the first orderly analysis, development and application of the method. This, the work of Bernard, has directed the whole course of modern medical thought.

But still greater significance is attached to the work of this genius. Not only have its results during the last generation been astounding, but, unlike the other methods of attack which man has brought to bear on the mysteries of vital phenomena, this method approaches no limit. Each gain unfolds a new vista and the method is re-applied to infinitely increasing achievement. And so though we may never reach the horizon, at least, by following in the footsteps of Claude Bernard, we shall always advance.

Stanford University Medical School.

WHILE hernia in the male is a fairly frequent occurrence, its presence in the female is less common; and even more rare are those cases in which the hernial sac contains some or all of the internal genital organs.

In 1904, Jopson<sup>1</sup> made an exhaustive study of the subject and compiled from the literature what he believed at that time to be a complete list of the cases in which the uterus had been observed to be present in the sac of inguinal or femoral hernia. Ventral forms, which were most frequent and which resulted from the separation of the rectus muscle during pregnancy, were not considered. Twenty-one cases were reported up to 1904, his case being the twenty-second.

In 1912, H. P. Heineck<sup>2</sup> after reviewing the literature of the current English, French and German periodicals for a period from 1890 to 1910, was able to collect one hundred and thirty-seven such cases. Heineck's paper presents the subject in a most scholarly and critical manner, and a great deal of care is exercised in selecting the cases so that only true hernias containing the uterus or adnexa are included. His series of hernias is divided into the following types: ventral, inguinal, femoral, obturator, and ischiatic, which were proven either at operation or autopsy. The entire series of cases is presented in detail so that one readily may check over any point of interest. The observation is made that none of the cases were correctly diagnosed before operation.

Since 1912, several cases have been reported. Delepine,<sup>3</sup> in 1921, reports a case of strangulated femoral hernia containing the fimbriated end of the tube.

Birman<sup>4</sup> reported a case of a fallopian tube two and one-half months gravid in the hernial sac. He was able to collect four such cases on record.

Vas<sup>5</sup> reported a case of strangulated, right-sided, inguinal hernia in a girl of sixteen years. This case had the two ends of the tube in the abdominal cavity with the intermediate portion bound in the canal.

#### RELATION TO EMBRYONAL DEVELOPMENT

The facts which govern the occurrence of hernias in the male apply in the same way to the female. In the male, the descent of the testes during fetal life involves the formation of a processus vaginalis peritonæi, which in later life

\* Read before the General Surgery Section, California Medical Association, at its Fifty-Seventh Annual Session, April 30-May 3, 1928.

ordinarily is occluded in its middle portion, the distal portion remaining to form the tunica vaginalis of the testis. Should the proximal portion of this peritoneal fold persist after the usual period, a funnel-shaped depression of the peritoneum in the lower portion of the pelvis remains, into which a hernia may be forced. In the female, a similar fold of peritoneum gives rise to the canal of Nuck, which accompanies the round ligament and may extend with that structure to its termination in the labium majoris. As in the case of the male, this canal has ordinarily disappeared before birth, although portions of it may resist obliteration. Should the middle portion persist after the usual period, a hydrocele of the canal may be present. Should the proximal portion persist, a funnel-shaped opening in the lower part of the abdominal cavity is again present, and it is into this structure that herniation may occur.

#### CONTRIBUTORY FACTORS

Herniation may be the result of a number of factors, but probably the most important is increased intra-abdominal pressure. This may be either acute, as in guarding against a blow or a sudden strain, as when attempting to regain one's step after a fall; or may be due to a more prolonged straining as may occur in constipation. Actual blows on the abdomen probably are very much overemphasized in the formation of hernia and serve rather to draw attention to a preëxistent hernia. Laxity of the peritoneal support of the abdominal organs may favor their apposition to the internal orifice of a hernial sac, it being evident that organs that are firmly supported in the abdomen cannot be extruded. The organs having the most mobility in the abdomen and the loosest attachment in the abdominal cavity are the small intestine and the omentum; and this fact, without doubt, is the explanation of the frequency of these structures occupying the hernial sac. Inasmuch as the female organs are quite firmly anchored to the lower and anterior portions of the pelvis it would be very unusual to find these structures occupying the hernial sac, unless there be an anomalous or congenital laxness of the supporting ligaments; namely, the round ligament, the broad ligament and the uterosacrals. This laxness may occur later in life following repeated pregnancies. One would therefore expect to find hernias containing these structures either early in the life of the female (in the case of the presence of a congenitally patent canal of Nuck) or later in life when obesity or cachexia may have reduced the strength of the abdominal wall and when repeated pregnancies may have loosened the supporting ligaments of the uterus, fallopian tubes and ovaries.

From the care of a large number of inguinal hernias in the male, both in industrial and private practice, we have become convinced that there is always a predisposing anatomical factor present, and that this is, first, either a wide internal abdominal ring with funnel-shaped peritoneal fossa,

or second, an actually patent peritoneal canal occupying the inguinal canal.

The acute pain of which patients complain in the inguinal region at the time at which the hernia is supposedly sustained is interpreted as being due to the forcing of some abdominal structure into a position that nature had previously prepared for its reception. The same argument would hold for inguinal and femoral hernias in the female. In the case of direct inguinal hernia the sac issues from the abdomen medial to the inferior hypogastric vessels, and a pre-existing weakness of muscle and fascia is the determining factor. A considerable bulge of the preperitoneal fat in the space between Poupart's ligament and the conjoined tendon is frequently encountered in patients in whom an actual hernia is not yet present, but we believe that hernias developing from this anatomical foundation are slow in development and not of the acute or "traumatic" type.

In regard to femoral hernia, there is little difference in etiology. Whether a hernia develops into an inguinal or a femoral depends on some anatomical accident which may direct the sac below or above Poupart's ligament. Our experience with obturator and ischiatic hernias is very limited.

Hernias in the inguinal region occurring in the female have frequently been associated with underdevelopment, malformation or absence of internal or some of the external genitalia, as illustrated by a case of Deutschman,<sup>6</sup> who found a bilateral hernia in a woman of thirty-five. The right side contained a cystic ovary and the uterus; the left side contained the left tube and ovary. This case had an absent vagina and the uterus was a solid mass of tissue without a uterine cavity. Other abnormalities may consist of bicornuate uterus, imperforate vagina, absence of vagina and cervix uteri, etc. Cases illustrating these abnormalities are quoted in detail in Heineck's article.

True sliding hernias are not uncommonly encountered which contain part of the internal genital organs in the female; occurrence, symptomatology and treatment being quite similar to those of the more usual type.

#### SYMPTOMATOLOGY

The symptomatology of hernia of the type under discussion is not different from that of the ordinary hernia in which other structures may be included in the sac. The presenting symptom may be merely pain in the region of the hernia with swelling which is more marked on standing or on straining. In cases where the tube and ovary occupy the hernia, however, it is not uncommon that the sac should be painful and more swollen during the menstrual cycle than at other times, and this fact is of the greatest importance in making accurate diagnosis. The symptom, however, is absent very frequently. This is easy to understand when one finds a hernial sac occupied only by a loop of a redundant tube, both ends of which are still within the abdominal cavity, or in a case where only the fimbriated end of the tube occupies the hernial sac. Should the neck of the sac be tight, interference with the blood supply and



strangulation of the occluded portion may follow. The symptomatology of this is identical with the more common condition of a strangulated intestine or omentum, giving excruciating pain, extreme local tenderness and nausea and vomiting.

#### DIAGNOSIS

Diagnosis of a hernia is based upon the usual findings of swelling and impulse on coughing and occasionally local pain. The actual diagnosis of the contents of the hernial sac may be impossible, except that the increase of the pain and swelling during the menstrual cycle should lead one to suppose that the included tissue is most probably related to the reproductive system.

#### CASE REPORT

A patient, aged 42 years, contracted gonorrheal infection on August 5, 1925. Three days later, she presented a profuse vaginal discharge and was treated at her home. About a week later, it was evident that the inflammation had extended into the pelvis on both sides and the patient became acutely ill, so that on the third of September it was necessary for her to go to a hospital, where she remained until the second of October and received appropriate treatment. On the 17th of October, recurrence of the acute abdominal pain ushered in a second attack of the pelvic infection, which lasted about three weeks. During the second stay in the hospital it was necessary for the patient to receive a transfusion on account of the depletion of hemoglobin, due to the virulence of the infection. Under treatment, however, the acute pain and inflammation subsided and the patient was again able to carry on her work. Following the subsidence of the more acute condition, the patient was troubled for the next year with a great deal of pain in her periods, which lasted some ten days and were preceded by four or five days during which she had a temperature of from 99 to 100.

Examination early in 1926 showed a thickening in the region of the right tube which was the result of a tubal abscess. The uterus was in good position and fairly movable. The pelvic organs were not particularly painful although thickening could be felt on the left side. What felt like prolapsed ovaries were made out down in the bottom of the pouch of Douglas. The patient was watched and given symptomatic treatment.

Early in December, 1926, in addition to the above findings, a fullness was noted around and along the right inguinal ligament. The thickening of the tissues extended some two inches above Poupart's ligament and one and one-half inches below it. All this region was very tender. On palpation through the vagina one would be in doubt that the mass around the ligament was in any way connected with the thickening of the right adnexa. Palpating fingers led one to believe that it was a separate infection, although it seemed most probable that this swelling in the right inguinal region was an extension from the pus tube on the right side.

On the 17th of December, 1926, just before her next period was due, the patient awakened in the morning with a pain in the right inguinal region which was so severe that she could not extend her thigh, and had to keep her thigh in a semiflexed position while lying in bed. Extension of the thigh caused excruciating pain in the inguinal region. At this time she also had a fever of 99 and chills. She was transferred to a hospital and given hot compresses to her right inguinal region. There was also considerable

tenderness in the right lower quadrant, besides the superficial tenderness. The white count at that time was 15,000, 81 per cent polymorphonuclears. By the 22nd, the pain in the right inguinal region had practically subsided and the patient felt much better. On the 29th, it was decided to operate and perform a double salpingectomy to remove the source of infection in the pelvis.

**Operation.**—Low, midline incision. Uterus three times normal size with no adhesions on it. The left ovary was normal. The left tube was bound to the ovary at its fimbriated end; not much enlarged. This tube was removed. On the right side a hard mass was felt reaching into the internal inguinal ring. A conical tip of the cecum extended right up to and into the inguinal ring. When this was separated from the above mass a raw surface was left on the cecum which was invaginated and peritonealized by a purse string suture. After separating the head of the cecum, a knuckle of the sigmoid, and the ovary from this mass, it was found to be a knuckle of the right tube at its middle, herniated into the internal ring and undoubtedly abscessed extraperitoneally at one time. No liquid pus was found. The ovary was very much enlarged, filled with an unruptured follicle and cystic. The right tube and ovary were removed after the bowels had been separated from the mass leading into the internal ring. No liquid pus was found and no fluctuation could be felt between two fingers, one inside the abdomen and one without at Poupart's ligament. A small curet was inserted through the internal inguinal ring and as much as possible of the substance of the tube enclosed in the inguinal canal was curetted out.

Because of the probability of infection in the region of the right tube, a rolled rubber drain was placed at the bottom of the pelvis, more on the right than on the left side.

Following the operation, the patient had a stormy convalescence which was marked by a flare-up of the infection in the inguinal region and a fecal discharge from the wound which was shown by subsequent x-rays to come from a fistula leading down to the cecum. She continued to have pain and tenderness in the inguinal region, which was undoubtedly due to old infection continuing at the site of the right canal.

The pain in the right inguinal region persisted until about the beginning of February, 1927, but the fecal fistula persisted somewhat longer and spontaneously healed.

This case illustrates a type of inguinal hernia in the female into which was drawn a knuckle of the tube; thus resembling the case of Vas quoted above, and the extra-abdominal portions of this tube became palpable and extremely tender during the course of an acute inflammatory disease. It had not been noted prior to this inflammation, and it is impossible in retrospect to state whether it had always been present or whether it had resulted from the actual acute inflammation, which might have drawn it in apposition to the internal abdominal ring by the formation of fresh adhesions which later contracted into fibrous tissue and drew the tube still further towards the inguinal canal.

384 Post Street.

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## NONOPAQUE FOREIGN BODY IN BRONCHUS\*

### CASE REPORT

By JAMES B. BULLITT, M. D.

San Jose

THERE is nothing new under the sun. I doubt very much that the case I am to report presents a new symptom; it does, however, present a rather unusual symptom.

When a nonopaque foreign body lodges in a bronchus and does not immediately occlude it, local irritation with cough, persisting a longer or shorter time, is produced, but no other clinical or roentgenological evidence. If, however, a bronchus is occluded, one of two things happens. Either air is prevented from entering the lung parenchyma served by the occluded bronchus, with subsequent absorption of air and resultant atelectasis; or the foreign body acts as a valve permitting air to enter the affected portion of lung but preventing its expiration, producing thus an obstructive emphysema of the affected side and area. Accompanying this is more or less compensatory emphysema of the opposite, unaffected side.

When atelectasis occurs the mediastinum and heart are displaced toward the affected side, the diaphragm is elevated, the degree depending on the area of lung affected. On the other hand, in obstructive emphysema, the heart and mediastinal structures are displaced toward the unaffected side, the diaphragm being depressed.

The roentgen signs are dependent on the aforesaid mechanical conditions. In atelectasis there is, on the affected side, increased density, elevation of the diaphragm, displacement of the heart and mediastinal structures toward the affected side on inspiration.

In obstructive emphysema there is increased translucency of the affected side, depression of the diaphragm and displacement of the heart and mediastinal structures toward the unaffected side. With expiration the heart and mediastinal structures are displaced toward the unaffected side.

These facts are recalled to your minds just as a background to the case reported.

### CASE REPORT

A girl three years of age, while eating walnuts on November 22, 1927, started to cry. She choked, had a hard time getting her breath, and coughed for an hour or two. She came under my observation after the expiration of almost a month, on December 19. During this period she had shown slight temperature from time to time, with moist râles in lower half of right chest, leading the attending physician to a diagnosis of probable bronchopneumonia.

Radiograms showed slight depression of right side of diaphragm, the two sides on about the same level on expiration. There was slightly increased translucency of lower third on right, scarcely recognizable compensatory emphysema on left. Fluoroscopically

the right side of diaphragm showed practical immobility; the left side of diaphragm no marked increase of excursion.

The most striking fluoroscopic observation was the marked displacement of the heart to the affected (right) side with each inspiration, this constituting the unusual roentgen symptom to which I have referred. This displacement was very pronounced, the heart returning to normal position on expiration, thus simulating the displacement which occurs ordinarily in atelectasis. The observation of lateral movement of the heart is of course not new, occurring commonly in both atelectasis and in obstructive emphysema. In the latter, however, the displacement is toward the unaffected side with expiration, the heart returning to the median or near median position with inspiration.

On December 27, six days after the first observation, without interference, the child had a violent fit of coughing and expelled a large piece of walnut kernel. Thereafter fluoroscopic examination and radiographic examination showed a practically normal chest with a normally functioning respiratory mechanism.

The outcome in this case was most fortunate as, according to Chevalier Jackson, only about 2 per cent of such organic foreign bodies are expelled spontaneously.

208 Sainte Claire Building.

## APLASTIC ANEMIA DUE TO BENZOL POISONING

### REPORT OF TWO CASES

By JOHN MARTIN ASKEY, M. D.

Los Angeles

CHRONIC benzol poisoning with an aplastic type of anemia occurring in workers in can factories was first pointed out by Selling<sup>1</sup> in 1910. Here a solution of rubber in benzol was used as a solder substitute to rim the margins of the can tops. The evaporation of the benzol led to the poisoning. His classical work established its rôle as a leukotoxin and led to its therapeutic adoption in the treatment of leukemias.

Industrial precautions to prevent accumulation of benzol vapor have reduced the occurrence of poisoning. The following cases, one identical with Selling's, show that sporadic cases may occur and that the danger still is present.

### CASE REPORTS

CASE 1.—F. M., a Mexican, age 22, worked in a can factory since 1921, on the "dope machine," which covered the can tops with a solution of rubber in benzol. He had worked intermittently eight or nine months of the year until his first appearance. He first noticed headache, dizziness, weakness and a feeling of jocularity as though he were "half drunk." It was difficult to keep workers on the machine because of the headache and dizziness produced. He gradually became accustomed to the work, noticing no further trouble until May, 1927, when after three months steady work at the "dope machine" he noticed his gums bled easily when he brushed his teeth. He progressively grew weaker and his skin more pallid until his admission to the Los Angeles General Hospital on August 12th. His gums were then bleeding spontaneously. He was severely anemic with 2.3 million red cells; 45 per cent hemoglobin (Sahli); his white cells were reduced to 2100 with a lymphocytic percentage of 90. Absence of variation in size and shape of the red cells, characterized his anemia as an aplastic anemia. A platelet count revealed only 100,000, and as a corollary of the thrombocytopenia,

\* Read before the Radiology Section, California Medical Association, at its Fifty-Seventh Annual Session, April 30 to May 3, 1928.

the bleeding time (Duke) was prolonged to 25 minutes, and the clot failed to retract after 72 hours. The tourniquet test, however, was negative. His bleeding from the gums was spontaneous and steady. Within two weeks his red count had dropped down to one million, his white cells to 600, with 90 per cent lymphocytes. His condition was very critical. His lips were crusted with blood, his gums purplish and spongy. There was no other mucous membrane bleeding; nor any purpuric spots or petechiae.

Because of linguistic difficulty, no clear-cut history of exposure to benzol had been obtained. The case was considered as an idiopathic aplastic anemia, and based on Gibson's<sup>2</sup> report of recovery of a case following adrenalin therapy, adrenalin injections were begun, supplemented with ephedrin sulphate by mouth. Apparently coincident with this therapy, improvement began; the red cells rose gradually, the granulocytes became normal in percentage, the platelets returned on the smear, and the bleeding time became normal and the clot retracted. The oozing from the gums stopped and on December 12th, four months after his admission, he was discharged with 4.03 million red cells, 80 per cent hemoglobin, and a normal differential count. He had gained fourteen pounds. His diagnosis was that of an idiopathic aplastic anemia.

On May 2, 1928 he reappeared, saying the bleeding from the gums again was returning, that he had lost weight and progressively was losing strength. At this time a clear-cut history of exposure to benzol was obtained. He had returned to his work at the can factory in March and had worked daily at the "dope machine." A blood count showed his red count to be 3.3 million, hemoglobin 75 per cent, but the white cells reduced to 2100 with 45 per cent lymphocytes. The bleeding time had increased to eight minutes, and the clot after 24 hours was not retractile. The platelets on the smear were very much reduced.

**Comments.**—A visit to the plant showed a very definite odor of benzol hovering around the "dope machine" where he had worked. Out of seven other men working on the machine, none of them ever had had any bleeding symptoms. Most of them had had transient dizziness when first on the machine. One had worked eight years steadily, another three years, without any trouble. The company superintendent said in the last fifteen years he has known of no case outside of this one. They are now changing to a different solder substitute without benzol as the solvent, so that the hazard of benzol poisoning there will be removed.

**CASE 2.**—An American, age 42, began working November, 1927, at a plant which painted advertising panels for billboards. Physically he was in robust health. His past medical history revealed no hemorrhagic manifestations in himself or family. At the plant the old advertising panels, covered with paint were first soaked in lye, which softened the paint. They then were scrubbed with rags, soaked in gasoline to "cut" or remove the lye—this was his work. It was done in a partly enclosed shed, with very little movement of air. He often was busy all day scrubbing the panels, his hands constantly in contact with the gasoline. In November, 1928, a year after beginning work, he first noticed weakness. This rapidly progressed; within two weeks he said his color got as "white as a sheet." He lost eighteen pounds. After two weeks a tooth began to ooze blood. A doctor told him he was "leaded." His ears began to throb and "knock" and believing it was due to several carious molars he had four extracted. The sockets bled for one and a half hours; the bleeding stopped only by

packing. A few days later his nose bled spontaneously and continued for several hours. Packing finally stopped the bleeding, after he was given horse serum. While on the way to a hospital he fainted from weakness. A transfusion at the hospital stopped the bleeding and improved him moderately. He felt strong enough to go home after a week and was advised to eat plentifully of liver. On January 5th he was admitted to the Los Angeles General Hospital. He was markedly exsanguinated. The skin was dirty white in its pallor. His gums were swollen and purplish with bright blood oozing from the bases. Sordes and dried blood covered the teeth. He complained of blurred vision and the eye-grounds showed numerous fresh hemorrhages. Minute petechiae were present in the skin and a tourniquet test brought out a marked shower. There were no relevant findings in the chest; there was no splenomegaly nor generalized adenopathy. The red cells on admission were 1.2 million, hemoglobin 29 per cent (Sahli), white cells 3300, with a lymphocytic percentage of 67. The platelets numbered only 50,000, the clotting time  $2\frac{1}{2}$  minutes, but the clot was nonretractile. The bleeding time was 26 minutes. The blood smear showed no anisocytosis or poikilocytosis, and the platelets practically were absent.

On questioning, he first gave painting as his occupation, and plumbism was considered, but the blood picture was considered atypical. Until the history of exposure to benzol was elicited idiopathic aplastic anemia was the diagnosis. He was transfused, and immediately the spontaneous bleeding from the gums stopped. After four days it again started. For four months he has stayed at the hospital, his red counts never exceeding 1.5 million, and the white cells averaging 2500, with 65 per cent lymphocytes. The bleeding time has averaged 20 minutes. The bleeding has been controlled only by repeated transfusions. At first the benefit lasted only a few days, but more recently the bleeding has been controlled for a week. Thirteen transfusions have been given to date, and though numerically his blood picture has not improved, subjectively he is better. It is possible his bone marrow may yet begin to regenerate if the transfusions be continued.

**Comments.**—The gasoline used in scrubbing the panels was a mixture of California gasolines. Produced by the usual distillation process it contains as much as 17 per cent of the aromatic hydrocarbons, of which benzol is the basic compound. Gasoline produced by the "cracking process" often contains 25 to 40 per cent aromatic hydrocarbons.<sup>3</sup> Thus the percentage of benzol present in the mixed gasoline never is constant, but its presence is constant. It is interesting that a fellow workman has had no symptoms. The use of gasoline has been discontinued at this plant, so that the benzol hazard here too has been eliminated.

**Conclusions.**—(1) The use of benzol industrially is still hazardous. The ever present danger of poisoning should be recognized and precautions taken to detect it early. A drop in the white cell count is the first evidence.

1501 South Figueroa Street.

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## BEDSIDE MEDICINE FOR BEDSIDE DOCTORS

An open forum for brief discussions of the workaday problems of the bedside doctor. Suggestions for subjects for discussion invited.

### ENDEMIC DISEASES OF THE PACIFIC COAST

#### Rocky Mountain Spotted Fever

**E. C. Dickson, San Francisco.**—The incidence of eight cases of Rocky Mountain spotted fever in California this season attracts attention to this interesting disease. Endemic in the mountain regions of the American Northwest, it is most prevalent in Montana, Wyoming, and Idaho, although a moderate number of cases have been reported from Washington, Oregon, California, Nevada, Utah, and Colorado, and a few from North and South Dakota, Kansas, Wisconsin, and Illinois. The incidence in California is apparently limited to Modoc and Lassen counties.

The disease is an acute infectious disease which is caused by a virus which infects rodents and which is transmitted to man by one of the wood ticks and by a rabbit tick. The geographical distribution depends upon that of the infected rodents and these ticks, and is usually in areas of from three to four thousand feet elevation. The tick may become infected when it engorges with the blood of an infected rodent, and since, in its cycle of changes, engorgement is necessary in each stage, it may acquire infection in the larval, nymph or adult stage. Once infected, the tick remains infected during its life, and the female tick may transmit the infection through its eggs to its offspring.

Human infection is always acquired from the adult tick, and the symptoms develop in from three to ten days after the tick bite. The clinical course is that of a prolonged fever accompanied by a characteristic skin eruption. The prodromal period is characterized by headache, malaise and severe pains in the muscles and bones, and the febrile period is often introduced by a chill. The fever is of the continuous type, rising rapidly to 103 or 104 degrees F., on the second day after the chill, and, in fatal cases, may reach 107 degrees. In the milder cases the temperature begins to decline after ten or twelve days reaching normal during the third week, but in more severe cases it may persist well into the fourth week. The decline is always by lysis.

The spleen becomes palpable early in the course of the disease and the liver may be felt. There is parenchymatous degeneration of the kidneys with resulting diminution in the amount of urine, albumin, and many casts. The leukocyte count is usually higher than normal and there is a relative increase in the mononuclear forms. The pulse and respiration rates are rapid and, in severe cases, there may be persistent nausea and vomiting.

The rash appears in from two to seven days after the onset of illness, and is first seen around

the wrists and ankles from which it spreads toward the trunk. It is less marked on the trunk than on the extremities and is more marked on the back than on the abdomen. It may appear on the forehead, and in severe cases involves the palms, soles and scalp. It first appears as rose-colored macules from two to four millimeters in diameter which disappear on pressure. These gradually become more and more hemorrhagic and confluent until the skin is practically covered. The intervening portions of the skin are slightly icteric and the whole picture has been compared to the mottling of a turkey egg. The rash reaches the maximum of its intensity on about the tenth day of the disease, corresponding to the height of the fever. In severe cases it may progress to gangrene on the extremities such as the ears, fingers, toes, etc.

With the decline of the fever the spots fade but they leave a staining of the skin which may persist for a long time, and during convalescence they tend to reappear during sweating, hot baths, etc. Convalescence begins about the fourth week and is very slow.

Diagnosis depends upon the history of the tick bite, the characteristic eruption associated with fever, the leukocytosis with increase in mononuclear forms, and animal inoculation. If a guinea-pig is injected intraperitoneally with blood taken from the patient during the first ten days of the disease, it develops hemorrhagic lesions of the ears and scrotum, associated with a fever of from 102 to 106 degrees F.

The severity of the disease and the death rate differ in different parts. In the Bitter Root Valley in Montana, the disease is a serious one and the case mortality rate is as high as 70 per cent. In Idaho, however, it is as low as 5 per cent, and among thirty-five cases in California there was only one death.

Attempts to control the disease have been directed along the lines of eradicating the ticks by means of a parasite, and prophylactic vaccination of persons who may be exposed to infection. The former procedure is but in its beginning, and nothing can be said of the results. The latter, however, appears to be of definite value since there is a much lower incidence of infection of residents of the Bitter Root Valley who are vaccinated than among those who are not vaccinated, but the protection is not complete, as has been proved by the fact that at least two laboratory

workers who had been vaccinated became infected during the course of their duties. A lasting immunity is established by an attack of the disease.

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### Coccidioidal Granuloma

**W. T. Cummins, San Francisco.**—Coccidioidal granuloma is of interest to the internist, the surgeon, the pathologist, and the veterinarian. Clinically and histologically it resembles tuberculosis more closely than probably any other disease in its miliary and chronic osseous types. Cases, especially of the latter type, which are not proven by laboratory examinations to be tuberculous, should have careful bacteriological or histological examinations to determine the presence or absence of coccidioidal disease. The reporting of cases from Illinois, Missouri, South Carolina, Kansas, Arizona, New Mexico (or Pennsylvania), Washington, Argentina, and Brazil, shows that the infection is not confined to California, for these patients had never been in this state. To date there appear to be 134 diagnosed human cases. The disease has been noted also in bovine bronchial and mediastinal lymph nodes removed at a California abattoir.

Many of the cases of coccidioidal granuloma have had out-of-door occupations, and it has been suggested that the infection may be present in the soil or upon vegetation. A walnut picker developed a coccidioidal lesion of a finger. Insects may harbor and transmit the infection. It seems reasonable to think that there are at least two atri of infection in the human being, namely, the respiratory tract and the cutaneous tissues. The former route would favor the development of the acute miliary type, and the latter the cutaneous ulcers and the chronic osseous and arthritic lesions. Nothing is known as to the mode of transmission and reception of the disease. Case-to-case infection apparently has not occurred.

Experimental studies have been made upon swine, sheep, cattle, dogs, rabbits, monkeys, cats, and guinea-pigs, and this approximates the progressive order of susceptibility to infection. Different strains of the organism seem to vary somewhat in their pathogenicity, but it is usual for intraperitoneal inoculations in male guinea-pigs to produce an early orchitis. In many instances the diagnosis has been made readily by the examination of moist slide preparations of the patient's pus treated with a mild caustic (sodium or potassium hydrate). The organism grows well on the common culture media. With these pathological examinations, including the histological, coccidioidal granuloma is differentiated from blastomycosis. The double-walled, endosporulating cell, which is the infective agent in the former disease, is readily distinguishable from the budding cell of the latter disease. Immunologic studies with complement-fixation and cutaneous reactions have yielded conflicting results in coccidioidal granuloma. Positive precipi-

tin reactions have been obtained and negative agglutinations.

Early amputation of a limb, when the disease was apparently confined to that peripheral part, is the outstanding therapeutic agent up to the present time. This has resulted in the cure, apparently definitely, of four cases and possibly of five others. Crystal and gentian violet, salvarsan, neosalvarsan, iodids, vaccines, and x-ray have been employed with unsatisfactory results. Jacobson of Los Angeles has reported recently upon the effects of colloidal copper in a series of six cases with three apparent cures and two very much improved. Further investigations are being carried out and their results will be watched with much interest.

It is the writer's opinion that coccidioidal granuloma is a more common disease than is generally believed. All cases of acute and chronic tuberculosis that have been diagnosed only by clinical methods should have adequate laboratory examinations to exclude the possibility of their being coccidioidal in character.

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### Undulant Fever

**John C. Ruddock, Los Angeles.**—Undulant fever, usually known as Malta fever, has been known in epidemic form for a long time. Undulant fever, however, is not strictly a tropical disease, and is more prevalent in subtropical climates than in the tropics. It is prevalent in Mediterranean countries with endemic foci in India, Africa, China, and Manila; and has been known since 1886 when Bruce isolated an organism which he called *Micrococcus melitensis* from patients suffering from this disease. The name Malta fever was given this disease in 1904-5 by a commission appointed by the British Government to study the fever on the Island of Malta. Their investigation revealed the fact that 10 to 15 per cent of the goats on the island had the organism, *Micrococcus melitensis* in their milk, and that the disease was contracted from drinking the milk from these infected goats.

From work done by Holt and Reynolds in 1925 it was concluded that undulant fever, or Malta fever, existed in the United States along the Mexican border, and had probably been present in Texas, Arizona, and New Mexico from fifteen to forty years. In addition to this belt, sporadic cases of undulant fever have been reported throughout the entire United States, and during the last year there have been about a dozen cases reported in southern California and Nevada.

Until five years ago all cases of undulant fever in this country were thought to be the same disease as that prevalent in the Mediterranean countries, but this was disproved when Keefer reported a case in the Johns Hopkins Hospital due to *Bacillus abortus*, and later corroborated by Evans, who isolated the same organism from several cases in an outbreak of undulant fever in the southwestern United States. It was evident in these outbreaks

that drinking goats' milk had not entered into the development of the epidemic.

A long series of experiments has now been completed by Evans, Meyer, and others, proving beyond a doubt that *Brucella melitensis*, the cause of Malta fever, and *Brucella abortus*, which is the causal organism of endemic abortion of cattle and hogs, are closely related organisms. In order to correlate the knowledge of this disease, Meyer and Shaw proposed that the entire group be named *Brucella*, in honor of Doctor Bruce, who isolated *melitensis* in 1886. This name has been generally adopted, and these organisms are now known in the literature as *Brucella melitensis* and *Brucella abortus*.

Bacteriologically, any classification can only be made by means of the agglutinin absorption tests, as the cultural characteristics are all identical.

It is now an established fact that *Brucella melitensis* var. *abortus* may infect man, and also that this same organism causes contagious abortion of cattle and other domestic animals.

No case can be considered proved unless the agglutinin absorption tests are carried out because of the cross-agglutination among the various strains of the *Brucella* group and with the causative organism of tularemia.

It is to be noted that the majority of the reported cases of *Brucella abortus* infection which have been recognized in this country were found by a few observers, who, having had their attention directed to the disease by the recognition of one case, were able to find other cases by looking for them.

Human *abortus* infections have also been reported from other countries. Bevan reports thirty-five cases from South Africa due to *Brucella abortus* in 1925. Several series of outbreaks of *abortus* infections have occurred in Italy since 1925. Auchie gives a statistical table showing the alarming presence of *abortus* fever in France. From 1920-24, 952 cases; 585 of which were confirmed by laboratory methods.

There is no specific fever which presents the same group of remarkable phenomena. The incubation period is from six to fourteen days followed by a gradual onset of symptoms. The temperature gradually rises and the clinical symptoms are much the same as found in typhoid fever (lassitude, malaise, loss of appetite, and headache). After a few days the patient complains of generalized rheumatic pains, accompanied by a slight sore throat.

The fever, which is the outstanding manifestation and which gives the disease its name, is remarkable. It has a peculiar irregular curve consisting of intermittent waves or undulations of a distinctly remittant type lasting from three months, the average time, to two years. The undulations may be separated by apyrexial periods of varying lengths, so that relapses are common.

The spleen and liver are enlarged and sometimes painful after two or three weeks.

Profuse perspiration of a peculiarly disagreeable odor is present. Chills are uncommon.

Neurasthenia and nervous symptoms are common. Delirium is rare.

Acute arthritis of wandering type may be present with enlarged reddened joints which sometimes go on to suppuration. Orchitis and oöphoritis are frequently associated symptoms.

Glandular involvement is rare.

Aside from a relative secondary anemia and leukopenia the laboratory findings are negative. The organism may be grown from the blood and urine with difficulty.

Agglutination by the patient's serum of the specific organism will lead to a positive diagnosis.

Undulant fever is apt to be confused with malaria, acute rheumatism, bacterial endocarditis, typhoid fever, tuberculosis, certain types of leukemia and tularemia.

There is no specific remedy for this fever, although many forms of treatment have been tried. Vaccines, serums from convalescent patients, autogenous serums, and many drugs have been tried without results.

Quinin, however, as used by Ochsner in the treatment of malaria is perhaps the treatment of choice. General measures as suitable for typhoid fever should be instituted.

It is of the utmost economic importance that the etiological factor of undulant fever be determined. The raw-milk industry is on trial until it is determined whether the strain of *Brucella abortus* that infects a large percentage of our milk cows is pathogenic to human beings. It is a strange coincidence that all of the cases that have developed in southern California had been placed on a concentrated raw milk diet for various reasons. This question of pathogenicity will probably be answered in the near future as soon as experimental work now being done at Hooper Research Foundation is completed.

Any case of long-continued fever with sweats, enlarged spleen and leukopenia, in which a proved diagnosis cannot be made, should be suspected as an *abortus* infection. *Brucella* infections among cattle and hogs are exceedingly common, yet those cases of undulant fever in man that cannot be distinguished serologically from the *Brucella* infection in cattle and hogs are so few as to be looked upon as medical curiosities.

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#### Tularemia

**R. H. Creel, San Francisco.**—Tularemia is unique in that the causative factor, *Bacterium tularensis* was discovered several years before the disease in man was recognized as a clinical entity. McCoy and Chapin of the United States Public Health Service while engaged in the examination of California ground squirrels (incident to anti-plague measures) noted in 1910 a "plague-like disease" in these animals, and in 1911 isolated



from a Tulare County squirrel the organism that causes tularemia.

In 1914 Doctor Wherry reported from Indiana the isolation of *B. tularensis* from cases of conjunctivitis.

Doctor Francis of the Public Health Service in a study of a not uncommon disease in Utah that had been known as "deer-fly fever" established the identity of the latter as tularemia. In 1921 Francis gave the disease the name of tularemia.

Judging from the trend of investigations in recent years, tularemia is not a new disease in the United States, but only a recently discovered one. Up to 1924 only fifteen cases were reported, whereas over four hundred have been reported in the past four years, due probably to a wider dissemination of knowledge of the disease.

Although the infection is known to have existed in California ground squirrels since 1910, human cases within the state were not recognized until 1927—two cases in which the infection was contracted from rabbits of Sacramento County. It is not reasonable to assume that such infrequency represents the true incidence of the disease in California. It seems probable that cases have been erroneously diagnosed.

The disease occurs in four clinical forms: ulceroglandular, oculoglandular, glandular, and typhoidal. The ulceroglandular type is the commoner manifestation and is characterized by a primary papule breaking down into an ulcer, with involvement of regional glands and marked constitutional symptoms—prostration, chills, sweats, weakness, bodily pains, and temperature. The oculoglandular type varies in that conjunctivitis is the first and dominant symptom, accompanied, however, by constitutional disturbance and involvement of regional glands, as in the ulceroglandular form. The glandular type occurs without primary lesion and may be confused with tuberculous or venereal adenopathy. The typhoidal cases present neither primary lesion nor gland involvement.

Added to the clinical symptoms the *B. tularensis* can be found in the blood of a case within the first week, and later on, commencing in the second week, the blood serum will agglutinate *B. tularensis*. Since the organism will not grow on ordinary culture media its identity is accomplished by inoculation of guinea-pig with blood from patient during first week of infection, or tissue from ulcer or glands, and the employment of special culture media. The serum of a patient, however, will agglutinate *B. tularensis* from the second week on, increasing in titer up to eighth week, but persisting thereafter to a lessening extent for months.

The stage of incubation is variable with an average of three to four days and a range from twenty-four hours to nine days.

The onset is sudden with chill, chilly feeling, headache, and prostration. The fever rises abruptly, but remits on the third or fourth day, when symptoms subside. After two or three days the fever again rises and continues for two or three weeks longer, and convalescence is slow.

Weakness and lassitude persist for two or three months. The mortality in a group of five hundred cases was 4 per cent; occasionally the infection may be of a fulminant type:

The disease is commoner in rural districts, but many cases have occurred in cities, among market employees handling rabbits. The disease has been mistakenly diagnosed as influenza, "septic infection," typhoid fever, and sporotrichosis.

In view of the comparative newness of the disease as a recognized clinical entity and the erroneous diagnoses of cases in other localities, it seems not unreasonable to believe that the disease is more common in California than the few cases reported would indicate, particularly as we know that the infection is widespread in California ground squirrels, rats, field mice, and rabbits. It is noteworthy that Doctor Chapin, who with McCoy discovered *B. tularensis*, contracted the disease in the laboratory, but didn't realize its nature until a test of his blood subsequent to recovery showed it to be agglutinative for *B. tularensis*.

Tularemia should be considered when a patient presents any of the syndromes described above plus a history of having been bitten by a tick or fly (especially horsefly) or of having dressed or dissected a wild rabbit.

There is no specific therapy for the disease. Treatment is palliative and symptomatic. There is no advantage in excising or incising glands unless, and after, suppuration has progressed to marked fluctuation. Whenever a case develops in a locality the physician should do what he can to acquaint the community of the danger in handling wild rabbits or squirrels. The control of the disease is essentially a public health problem.

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The Farmer has Deserted the Small-Town Doctor, not the Doctor the Small Town.—The article in the August issue of the journal from the National Grange relative to the country doctor situation is interesting, but does not place the blame where it belongs. The farmer is to blame. He has ceased to adequately support the country doctor, and the basic reason for this is ease of transportation.

I started practicing nearly thirty years ago, in the horse-and-buggy age. In those days it ordinarily took two hours to go twelve miles. Nowadays the farmer in that community can drive fifty miles in the same length of time—and he does. In that community today the local doctors get nothing but emergency cases and confinement and other work among people who are too poor to get away. The confinements all go out of town (if able), much of the surgery goes out without even consulting local men. Whereas, the town used to support four or five doctors it is now able to support only two, and they are hard-up. The people are still there, the sickness is still there, but it is on wheels traveling to the big towns.

The farmer has deserted the small-town doctor, not the doctor the small town and the farmer.

It is not specialization except in this respect that the farmer will get into his car and go to a specialist himself without even consulting the home doctor and an awful lot of them do.—Paul R. Howard, *Illinois M. J.*

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Editorial Interference.—An Iowa paper recently announced that owing to lack of space several births would be postponed until the next week which clearly is an unwarranted editorial invasion in the field of birth control.—*Ohio Health News.*

## California and Western Medicine

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Editors . . . . . { GEORGE H. KRESS  
EMMA W. POPE  
Associate Editor for Nevada . . . . . HORACE J. BROWN  
Associate Editor for Utah . . . . . J. U. GIESY

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## EDITORIALS

### COUNTY LAW LIBRARIES EXIST—WHY NOT COUNTY MEDICAL LIBRARIES?

**California County Law Libraries—Their Organization.**—Years ago members of the California legal profession, appreciating the good which open law libraries could bring to themselves and to the public, secured the passage of certain state laws which made possible the institution of public law libraries in the different counties of California. The statutes dealing with these matters are found in sections 4190-4205 of the Political Code of the State of California. The law was amended in 1907.

The income to support these libraries has been maintained in good part in automatic fashion, because practically every paper filed in a superior court proceeding is obliged to pay a one-dollar assessment, the money so received going into the county library fund. In the larger counties, where legal controversies are very numerous, this modest tax establishes very respectable sums.

The board of trustees are provided through the superior court judges and the boards of supervisors of the respective counties. The duties and powers of these honorary trustees are laid down in the statutes; and the boards of supervisors are required to provide quarters for such libraries.

It is also stated that "said libraries shall be free to the judiciary, county officials, and members of the bar of said county, and to all inhabitants of said county; but the board of trustees may pro-

vide that no books shall be removed from said libraries, except by the judiciary, county officials and members of the bar, without the payment of such dues as the board of trustees may ordain, and under such rules or regulations as may be by them provided."

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**Justification of Such Libraries.**—Most of the volumes in law libraries deal with the material interests of citizens. Material interests are, however, no more important to the state than are the health and life interests of citizens. For what-ever promotes the health and prolongs the lives of citizens makes for their happiness, and permits them as more useful citizens to add wealth and prosperity to the state that would otherwise be nonexistent.

It would seem a fair conclusion, therefore, to assume that if the state can countenance and support law libraries, then in equal measure, it would be justified in supporting county medical libraries.

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**A Plan for the Institution of County Medical Libraries in California.**—Granted, for the sake of argument, that county medical libraries could justifiably be maintained through public funds, the query could then be put as to the special source of such maintenance moneys. Such funds must come, in all probability, from some other source than mere direct appropriation from the general fund which is at the disposal of the boards of supervisors. The legal profession evidently realized this when it provided for a special tax on certain legal papers. The medical profession must also find a somewhat similar line of approach, as regards annual maintenance funds for county medical libraries.

Is there such a method of approach? To the mind of the writer, there is, and he believes it can be found in the services which are rendered by the attending staffs of our county hospitals.

The constitution of California provides that its county units shall care for indigent citizens. In our larger counties indigent citizens who are sick or injured are cared for in hospitals which are of very great size, the Los Angeles General Hospital for instance, being one of the largest hospitals of the United States.

Much of the professional work done in these county hospitals is the donation of members of the attending staffs of the institutions.

The question may very justly be put, as to why these physicians and surgeons, in contrast to other citizens, should give gratuitous service to the counties. These services are the equivalent of money. Do lay citizens give gratuitous gifts of money to the county treasuries in order to keep down the taxes?

If, therefore, extremely modest stipends were given to these attending staff physicians, these stipends to go into a public medical library fund,

designed in its work, to still further serve the public interests, surely no legitimate objection could be made to such appropriation.

As has been stated several times in these columns, in the Los Angeles General Hospital the attending staffs of some one hundred to two hundred members, on the basis of something like ten dollars per hour in time spent at the county hospital, and an average fee of about fifty dollars for each major operation, donate to the county of Los Angeles something like five hundred thousand dollars a year!

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*Why Not Institute County Medical Libraries Through County Hospital Professional Services?*

Los Angeles County, for instance, would have no cause for complaint, if, being indebted to the medical profession to the amount of five hundred thousand dollars yearly, it was permitted to cancel that indebtedness, by a payment of ten cents on the dollar, which would be fifty thousand dollars, that amount to go to the support of a county medical library, which would provide means for practitioners of the healing art to give increasingly good service to the public.

Certain legal technicalities would need careful study before such a plan could be put into operation. Perhaps an outright appropriation by boards of supervisors, in total yearly amount to be made on the fee basis just indicated might be possible.

If, however, this could not be done, and it was necessary that the payments for such services could only be made to the physician citizens rendering the same, then perhaps staff organizations or rules could be adopted, so that all such attending staff members would turn over their pay vouchers to the county medical library fund. In such a method it would be necessary to have provisions whereby staff members, in signing an application for staff membership would stipulate that they would abide by this rule of turning their pay vouchers into the library fund, and that any staff member refusing or neglecting to do so would automatically lose his staff membership.

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*Present Library Facilities and Proposed County Libraries.*—San Francisco, with its University of California and Stanford Lane libraries, is in much better present position as regards medical book collections than is Los Angeles with its lone Barlow Medical Library. Arrangements could probably be made whereby the medical libraries already existing would be able to effect a working union with county medical libraries, that would increase the efficiency of all the units concerned.

If the larger counties could have splendid county medical libraries brought into existence, the state statutes permitting all county boards of supervisors to institute such libraries might carry

provisions for loan facilities to the smaller county libraries of other parts of the state. In that way county medical libraries in our larger metropolitan centers could be made of real service to fellow practitioners in all parts of the state.

An annual county medical library appropriation of fifty thousand dollars a year is the equivalent of an endowment of one million dollars! That is the amount of money which would accrue to the Los Angeles County Medical Library on the basis of the fee schedule indicated. From present indications an endowment of such amount from private sources seems virtually out of the question.

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*Who Could Use Such Libraries?*—All licensed practitioners of the healing art would necessarily have the right to use such libraries. The justification for such appropriations would be the promotion of the public health. It stands to reason that every practitioner of the healing art, possessing a license from California, and desiring to improve his knowledge and skill, should have the right to avail himself of the facilities of such libraries as were supported by public funds. However, here as with the law libraries, the trustees should have the right to lay down the rules for each library.

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*Would Such a Donation by Staff Members Be Fair?*—Of course, it may be asked, why should a small number of attending staff members on a county hospital staff do all this for their fellows? On the other hand, why not? What are these attending staff members receiving now, and what will they ever receive in the future, in the way of money emoluments if such moneys for services to indigents in public hospitals were to go into their personal pockets? Probably nothing. So that what they give up is only something that they would not otherwise have received. In addition, the very fact that these staff members donate services to indigents would warrant the belief that they would be equally generous in efforts that would upbuild their profession and which would make for better service to the public.

Such attending staff members might be given special privileges in the way of book withdrawals, if special courtesies were necessary, to compensate them for their generosity in turning over the pay vouchers.

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*Apparent Obstacles Not So Great That This Subject Should Not Be Considered.*—The writer has long thought of this plan and believes, if a careful study of the proposition were made, that out of such study certain tangible good results would come into being. It is here presented so that other members of the profession may consider its merits and demerits. At any rate, even



if it is altogether a dream, thought on the subject of medical libraries for California and adjacent states will do harm to none of us.

#### HEALTH INVENTORIUMS AND PERIODIC HEALTH EXAMINATIONS

*Periodic Health Examinations Not a New Thing.*—Periodic health examinations, from the standpoint of either theory or practice, are nothing new. Before the advent of specialists, family physicians in making visits to sick members of families, were often given an opportunity to pass on the general health of all members of the families. It was this very work of overlooking healthy members of the family, which was very, very often quite efficiently done, that endeared so many general practitioners to their patients and helped give them the beloved name of "family doctor." And even specialists who, in carrying on their work, contact with the family circle, very often give passing attention to other than the one ill member of the family for whom they are called, and advise consultation with the family physician on matters in which the health of other family members is involved. To do this kindly professional service does not belittle the professional capacity of any physician, be he a specialist or a general practitioner. Ours is a profession and guild devoted to service in the healing art, and not one in which a member is permitted to do only so much or a certain limited kind of work per day, as among some of the artisan groups.

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*The Quest for Health Vogue.*—Nowadays, as a consequence of such things as newspaper and periodical exploitation of health matters, and because of the leisure and physical comforts which so many of our lay fellows possess, it has become almost a vogue in social intercourse, to discuss such problems as diet, exercise, hygienic dress, as well as physical ailments and defects proper. Cultist practitioners, and propagandists on food, dress and athletics, as well as other new thoughters, have been fully alert to this very susceptible psychological condition of many lay persons, and have used the same to carry on propaganda work for their various wares. So much at times and in certain places has this been the case, that many regular and ethical practitioners have taken almost a dislike to certain physiotherapeutic and other upbuilding measures because of the undesirable company in which they would find themselves, in availing themselves of certain physical appliances.

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*Two Recent Articles on Periodic Health Examinations.*—In various forms these matters of health conservation and health methods have been receiving increasing attention in recent years in the medical press. Two recent articles bring these

subjects to our attention anew. One is by Franklin H. Martin, M. D., director general of the American College of Surgeons, printed in September *Hospital Progress*, and the other is by Donald B. Armstrong, M. D., and printed in the *Journal A. M. A.* of September 1.

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*Franklin H. Martin's Interesting Suggestions.* Martin's paper contains some expressions of viewpoint which seemingly need further elucidation. He refers to these periodic health examinations as "health inventoriiums" which, we take it, is intended to be synonymous with the words "health inventories." He speaks of periodic health examinations as if these were a new movement, separate and distinct from public health or organized health medicine on the one hand, and on the other, from curative medicine.

As a matter of fact, we must acknowledge, as indicated in our opening paragraph, that periodic health examinations have been very much the custom in the past. It is true the general practitioner who checked upon the family member and pronounced him fit and sound did not call such an overview a periodic health examination or a health inventoriium, and in many cases he sent no bill for the professional services so rendered. But a goodly portion of such service was rendered just the same.

Martin elaborates his advocacy of modern-day examinations of persons in presumably good health by leading us to almost infer that such examinations, if we omit a baker's dozen or so of clinics, and of the dispensaries of medical schools, can only be properly made in the 1805 standardized or accredited hospitals of the United States which have received the proper grading from the American College of Surgeons.

In his plan the hospital shall provide the examining room free; the laboratory examinations shall be charged for at a nominal rate, and if a charge be made for such service the examining physician shall be responsible for the fee. The patient presents himself to his personal physician with complete printed form blanks which it is suggested the American Medical Association or some such agency shall supply; and on this the examining physician is to carefully and fully record his painstaking findings concerning the patient who wishes to learn whether he is in good health. Where the patient has no personal or family physician a disinterested committee from the county medical association is to give the applicant the name or names of proper physicians who can properly do such a periodic health examination.

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*What Martin Thinks His Plan Would Do.*—This plan is set forth by Martin, "to save the profession from state or socialistic control, or from strongly entrenched interests in the matter of car-

ing for personal health, a simple and practical solution. . . ."

\* \* \*

*Analysis of Martin's Statements.*—In reading Martin's plan, one's first surprise is on the action of the American College of Surgeons in presumably stepping into the domain of internal medicine and of the territory of work which would naturally be allocated to the American College of Physicians.

One's second surprise comes as one reads the nature of the plan as above roughly outlined. Nor is there anything in the paper to explain the author's statements why such health inventories presumably cannot be properly done in the great majority of physicians' offices as at present conducted, but can be well done almost only in the 1805 hospitals that have passed the inspection of the American College of Surgeons.

In another paragraph Martin writes: "There will be an average of not more than sixty practitioners who in the course of a year would occasionally seek the aid of each hospital in examining apparently healthy individuals."

With a population of some 110 million persons in the United States; and who, according to the viewpoint of ultraconservation of health propagandists, all, or in great majority, should undergo these periodic health inventories; and, if one understands Martin correctly, with the accredited hospitals as almost the only places capable of providing proper facilities, we must confess that, for ourselves, we are bewildered when we try to reason out how such a plan will "save the profession from state or socialistic control."

Nor do we understand why a hospital should provide a room free for such examinations, when a shoe merchant would refuse free shoes to a barefooted boy, or a food merchant, meal and vegetables to a hungry applicant. Why also, should those colleagues who maintain laboratories do their work at a "nominal" charge, and why, if the patient does not pay the laboratory fee, should the examining physician be made to pay the same?

Why, in fact, should not such a painstaking examination of a so-called healthy person be paid for from start to finish on a fee basis that would equitably compensate the physician for his time, his knowledge and the use of his equipment?

Why should a presumably healthy person be examined on a reduced or cut-rate basis, when unfortunate and sick people are expected to pay a proper fee?

In a final statement, Martin in appealing to a selected list of hospitals to send him the viewpoints of their staffs on the plan, writes: "This plan involves principles which in the near future are to revolutionize the practice of medicine." On this point we can only say, "it may be," but for ourselves we cannot find in his article the premises from which such a conclusion could be properly drawn. Perhaps our hospital superintendents and staffs and other readers of this journal may be as optimistic as Martin. If time proves such view-

points as Martin presents to be correct, we shall be gratified, and shall be glad to acknowledge our error of thought as here expressed.

\* \* \*

*Armstrong's Article—A Survey from the Life Insurance Standpoint.*—Armstrong's article on "Organized Medicine and Individual Health and Medical Guidance" is of interest not only because of the points brought out therein, but because he is an assistant secretary of the Metropolitan Life Insurance Company. That company sends out some forty-seven million health pamphlets yearly and has referred some four hundred thousand policyholders to their personal physicians for advice. His conclusion seems to be that there should be created in every community, presumably through a county medical unit and its subdivisions, "a local bureau for the dissemination of information for the education of people in sound medical methods and for medical guidance. Such a bureau would be made known to the public through dignified publicity. It would arrange for individuals to see competent physicians. . . . The service must be more than a gesture, more than purely informational—it must be real personal guidance."

The above and similar thoughts and lines of action have been often proposed in medical society meetings and in medical journals, and the leaders in organized medicine have for many years been in complete harmony thereon.

\* \* \*

*Obligations of County Medical Societies in This Important Conservation Work.*—All county medical societies should be fully alert in these important matters.

Each county society should cooperate with other county units, and aim to have its own state and the national associations take up these procedures as definite responsibilities through specific committees and officers.

It is true that hundreds of lay persons desire careful examinations as to their health status. It should be possible to secure these examinations and good advice along health conservation lines, from hosts of able physicians anywhere and everywhere. As in the past, the mass of this work, in our opinion, will be carried on in the workshops of such physicians, namely, in their offices, and in the properly qualified laboratories to which they turn for special technical and laboratory examinations.

If our county medical societies will instill in their members the ambition to practice medicine, both as a science and as an art; if they will impress upon all members the desirability of practicing not only curative, but efficient preventive medicine; and if through the county, state and national organizations they will watch both personal health and public health medical practice, we will need have little to fear but that the major-

ity of our lay fellow citizens will be glad to avail themselves of services which can be best given by members of a well-trained and efficient and well-organized medical profession.

#### REPORTS FOR LIFE INSURANCE COMPANIES

That the House of Delegates of the American Medical Association adopted the following resolution on May 17, 1927, indicates rather strongly a reaction against a common abuse:

"Whereas, There is a growing tendency on the part of some insurance and indemnity companies, as well as industrial concerns, to impose on physicians by requesting or expecting that more or less complete physical examinations, including written reports of same, or that a written expert medical opinion concerning patients shall be made for nominal fees or perhaps no fees at all, and that there is increasing tendency on the part of such organizations or concerns to shift responsibility by making erroneous claims that the services are in the interest of the patient or client from whom the physician cannot justly claim compensation; therefore be it

"Resolved, That it is the sense of the American Medical Association as represented by this House, that the members of the American Medical Association are under no moral or legal obligations to furnish professional services or expert professional opinion concerning any patient, or reports concerning professional services rendered any patient, to insurance or indemnity companies, to industrial concerns or their agents, or for the benefit of any third party, unless paid the customary fees charged by the medical men of that community for similar services rendered to private patients."

Few physicians have escaped receiving a courteous note from some life insurance company to the effect that "in the month of such a year you treated John Doe. Will you send us a report of your findings and treatment?" The question of responsibility to patient and of inviolability of confidence in these cases is often a nice one. Is the physician's report for his patient's interest or the insurance company's? The question whether this clinical work of searching back records and filling out a questionnaire should be a gratuitous service or not has evidently received frequent consideration by members of the Association, and has been explicitly answered in the adoption of the above resolution.

#### MEDICAL TESTIMONY IN CRIMINAL CASES

*Factors in the Making of Reputations.*—Whatever, in the eyes of the laity, affects the reputation of the regular medical profession should be of interest to those who believe in organized medicine. For we organize, to maintain as fully as possible, the highest standards of medical practice and conduct. If we would attain to our fullest

efficiency with our fellow citizens, it is not only important that our general practice and conduct should measure up to proper standards, but that we should avoid unimportant issues and dilemmas, in which our participation is apt to be misjudged and bring reproach upon us, either as individuals or as a profession.

Or, to put it otherwise, if we are wise we will avoid those things in which so distorted a presentation of our professional participation may be made as to create in the minds of thousands of lay fellow citizens a distrust of our scientific knowledge or of our honesty of motives.

\* \* \*

*A Recent Medico-Legal Case.*—These and associated thoughts must have come to many of us, when in a recent homicide case in one of the courts of Los Angeles a battle of medical experts was placed upon the stage.

There is no desire here to go into the merits of that or any other of the recent cases that have had somewhat similar stage settings. Nor is there any wish to deny to any member of the profession his right to fight valiantly for scientific truth, as he sees it. It is justifiable to hold, however, that those members who engage in these medico-legal battles in criminal and similar cases should be very certain as to the whys and wherefores that make them parties to these controversial court scenes. For the lurid portrayal of their viewpoints in the daily newspapers is oftentimes anything but edifying, and certainly far removed from that atmosphere of decent respect, in which all physicians who believe in the ethical practice of the healing art desire the public to hold concerning the medical profession and its members.

\* \* \*

*Where Rests the Blame for Newspaper Notoriety in Medico-Legal Cases?*—It is quite true that the newspapers are largely to blame for much of this unfortunate state of affairs. When a human life is at stake before the courts it is quite as much in order for a physician to give just and honest battle in defense of that human life as it is for the same or a colleague physician to strive to save the life of a patient in private or hospital practice. Nevertheless, as individuals of mature years, we should hesitate and give careful thought before we consent to acquiesce in the requests of legal defenders or prosecutors, who seek medical opinion that largely or entirely will be in favor of their respective positions, or who will so word their questions as to give false impressions to court or jury.

It must be remembered that one thousand members of the profession, day in and day out, year after year, can give most conscientious and efficient and at times most altruistic service to indigent lay fellows, and receive for services so ren-



dered practically no words of praise or laudatory comment in the lay press.

But one to a half-dozen members of the profession, who, aided and abetted by attorneys, permit themselves to become parties to one of these court controversies, such as a spectacular murder case, will receive in a few days, not lines or inches, but whole columns of publicity. The accentuation of widely conflicting medical opinion, according as the presumable expert is on the side of the defense or prosecution, does not make for kindly opinion of our profession by lay citizens. If this lack of respect largely vented itself on the medical participants in these spectacles, it would not be so bad, and we may add, that in itself soon would bring to a stop much of such expert medico-legal controversies. Unfortunately, however, the loss of respect by the laity is vented upon the profession as a profession; and in the eyes of many laymen the opinion takes root that so-called regular and ethical practitioners have after all not so wide a breach between themselves and the cultist practitioners whom they decry because of low standards of professional outlook.

\* \* \*

*How Can the Unfortunate Phases of Medico-Legal Controversies Be Minimized?*—It is granted that the whole subject is a big and broad one, and that many vital and important elements enter therein.

We have no easy solution to offer for the difficulties that are encountered in this form of legal procedure. We medical men are far distant from our lawmakers and from those who devise our political and civil codes; and in one sense, because of our lack of broad knowledge of these matters, we are quite content that our legal brethren should bear the major responsibility for the laws that are placed in our statute books.

In matters of so-called expert medical testimony we are, however, as a medical profession, very much interested. We regret that in our American courts our legal brethren should have permitted a system to have grown up, as regards expert testimony, that is so far removed from the English system. In the English system, from a panel of carefully selected medical men, the court seeks knowledge as to facts and expert opinions, and in that country medical men are not lured at so many hundred dollars per day, to give expression to partisan viewpoints in favor of the side supplying the retaining fee.

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*The California Legislature Convenes in January Next.*—In the last California legislature there were many amendments to the criminal and other codes. At the session of the legislature, which will convene in January next, these and related matters will continue to receive special attention.

Would it not be a very proper thing for component county medical societies whose members are interested in these matters to appoint committees to confer with committees from their local bar associations, in the hope of bringing about

some improvements in the present deplorable methods? Working through the local and state medical and bar associations it should be possible to bring about a betterment in these medico-legal and expert medical testimony procedures that would be of real benefit, not only to the medical and legal professions, but to the public at large.

*Specialism Running Wild*—An Attendant for Each and Every Nerve.—An apt valuation seldom dies. "Truth crushed to earth will rise again," so does the epitomization of an unchanging condition endure, provided in the first place "Father was right."

A correspondent has asked that the journal shall reprint from *Judge* magazine this clipping that appeared later in the *Journal of the Medical Society of New Jersey*. The article is a modern tribute to the skill of court jesters of yesteryear. "If the shoe fits, let the profession put it on."

Headed "Specialists, Specialists, but Not a Doctor in Sight," the article, signed by Don Herold, reads in part:

"Who remembers when we used to call a doctor in case of sickness? Nowadays we have to be mighty delicate about that. We might get an inch over the boundary line, and call a doctor for the wrong organ. Lots of people just die now rather than decide which specialist to summon.

"In the big cities at any rate there is nobody to come and see us when we are 'just sick.' We have to know exactly where we are sick and what ails us.

"Half the time we are sick in between organs, so there is nobody in town to cover the situation. The only thing to do is to wait until the disease shifts to some part of our anatomy covered by a specialist of whom we happen to know.

"What is needed is a medical brokerage service. When theaters became so numerous in New York, for example, that it was impossible to run around to all of them to decide what show to see, ticket agencies naturally sprung up where you could stand in front of a counter and get a seat for any show in town. We need McBrides and Tysons for the medical profession. We need medical brokers who will send us where we belong.

"Once there used to be a few accepted kinds of specialists—ear, nose and throat men, for instance. Why, gosh, a man who covers the ear, nose and throat today is almost a general practitioner. There are now twenty-seven kinds of nose doctors alone. A man can now devote his whole life to the outside of the inside ear.

"Back in Bloomfield the same doctor used to bring us and bury us. Here in New York the obstetrician gives us a slap and a promise and turns us over to the pediatrician. There is a new doctor down the line every fifteen or twenty minutes from the cradle to the grave. People are not only chopped up into sections geographically but chronologically.

"A liver man will not even listen to young lungs. A heart man does not care how you are—all he knows about is hearts. And practically none of the new-fashioned doctors care how you feel.

"Let us pray that this intense specialization does not spread to other fields. It may be well and good to peddle a stomachache all over Manhattan before finding a buyer, but may we be spared from dragging a motor car all over the city to find 'the right man.'

"Oh, no, we don't touch that. You will have to take your car to a rear axle specialist. We concentrate on those teeny-weeny little wires in your spark plugs. And for that hoarseness in your klaxon you should see Croupem, the horn man."—*Illinois M. J.*

*Hints on Beriberi Prevention.*—Beriberi develops if other vitamin-containing food is not eaten with machine-polished rice.

Beriberi is prevented if those who eat machine-polished rice also eat maize, chicharo, habichuelas, sitao, patani, batao, payap, balatong, peanuts, etc.—*Philippine Health Service.*

## MEDICINE TODAY

Current comment on medical progress, discussion of selected topics from recent books or periodic literature, by contributing members.

### Urology

**Prostatic Adenocarcinoma.**—A very interesting discussion on the treatment of prostatic adenocarcinoma was recently presented by Chute.<sup>1</sup> It emphasizes the difference of opinion of urologists in general as to the best method of treatment of these unfortunate and desperate cases. There are distinctly two schools, in the opinion of one of which treatment is always purely palliative and never curative, and of the other that treatment should be radical and attempts made to cure whenever possible.

Of all cancers, prostatic cancer is particularly distressing. In the first place it is relatively frequent in occurrence, for probably four men in every hundred who reach the age of sixty have a cancer of the prostate, and it has the almost certain mortality of one hundred per cent. Statistics so far have not shown much encouragement in the way of treatment and it is on account of this prolonged discouragement that many urologists advocate purely palliative measures in the treatment of the condition.

The most marked characteristic of adenocarcinoma of the prostate is its insidious nature, often being very advanced before any symptoms of any kind are manifested. It is very slow-growing, metastasizes, as a rule, late and then generally to the long bones or vertebræ, and very seldom undergoes necrosis. The difficulties of the problem are increased by the fact that its only means of diagnosis is by rectal palpation, the characteristic finding in a case of carcinoma being stony hard induration in that portion of the prostate where it exists; but confusion arises because inflammatory conditions cause areas of induration that are sometimes indistinguishable, and also because many adenocarcinomata of the prostate have a distinctly soft or elastic consistency. Those who are in the habit of performing perineal prostatectomy are well aware of the number of surprises that they meet in finding a definite carcinoma of the prostate in patients in whom, previous to operation, the lesion had been regarded, on the evidence of palpatory findings, as purely benign. This alone, if there is any treatment to be adopted in these cases in the way of cure, emphasizes the advantages of the perineal route over the suprapubic in the treatment of prostatism, as a very large percentage of cases of carcinoma of the prostate are associated with benign hyperplasia. This is because the disease in the vast majority of cases starts in the posterior lobe and is confined to this area by Denonvillier's fascia, spreading toward the seminal vesicles and bladder neck. The urethra or bladder mucosa are not usually invaded so that there would be no evidence of the disease

cystoscopically. Even though the disease is insidious, slow-growing and frequently symptomless, once it becomes so advanced as to produce symptoms, these then become most distressing, consisting in disturbances of urination and pain. The pain in these cases is of referred character due to pressure on the nerves and is so constant and persistent as to render the life of these unfortunate truly miserable. That school which regards all cases as incurable resorts to simple suprapubic cystotomy as a palliative means of relief, relying on deep x-ray therapy or local radium treatments as a means of checking the pain, the cystotomy being performed to relieve the urinary obstruction.

It is interesting to note that the school which advocates this palliative course almost without exception treats benign prostatic hyperplasia by the suprapubic route, whereas those who are familiar with the perineum because of their experience with perineal prostatectomy for benign hyperplasia, advocate a more radical method of attack in these otherwise hopeless cases. Young has long advocated a radical operation, based on the principle of surgical attack against cancer anywhere, in the treatment of prostatic adenocarcinoma. Unfortunately the radical operation of Young is only possible in those cases diagnosed early, before it has spread beyond the area of the prostate, and of course before metastases to other parts of the body have occurred. Because of its nature, such early diagnoses are very rare, although they no doubt would be made oftener if rectal examinations were more universally adopted in the general examination of patients. Young himself has only performed twenty-four radical operations.

In those cases where the disease has spread beyond the possibility of radical removal, it can still be attacked by way of the perineum and usually according to two groups of conditions.

In one group where rectal examination indicates a spread into the seminal vesicles and beyond the probability of radical removal and in which there is no obstruction to urination, radium implantation, and the use of radium by urethral applicators and rectal applicators has been advocated.

In the other group in which, in addition to the spread beyond the probability of radical removal, there is an associated benign hyperplasia producing an obstruction, or where the cancer itself has so spread as to obstruct the urinary outlet, conservative perineal prostatectomy with enucleation of the obstructing portion and as much else of the cancer as can be removed, and then the implantation directly of radium tubes into that involved area not removed, is advocated. It is

often surprising how much actual relief of suffering and prolongation of life this latter procedure, even in the most desperate cases, can produce. There are authentic cases that have survived eleven or twelve years with complete control of urination and without pain or other distressing symptoms.

But, in spite of radium and deep x-ray, the treatment of prostatic cancer is most unsatisfactory, and it is for this very reason that effort should be made to make as early diagnosis as possible in order to increase the percentage of cases in which a radical complete removal can be performed. The occasional surprising benefit, prolongation of life and marked relief that follows the conservative perineal operation with implantation of radium justifies its more general application even in the face of the many failures. These failures do not leave the patient in a more distressing and unfortunate condition than does a suprapubic drain.

In the discussion above referred to, Chute takes the point of view of surgical treatment when possible and his colleague, John L. Cunningham, advocates the opposite course of treatment. In a recent very complete analysis of the carcinoma cases at the Mayo Clinic, Bumpus also came out definitely in support of the hopelessness of these cases, advocating that in the majority a simple cystotomy drainage gave them as much relief as any procedure.

But this brings us back to the point above presented, namely that those who advocate simple suprapubic drainage are the ones who perform suprapubic prostatectomy, whereas those who believe they can give more relief to these unfortunates by perineal surgery and cure a certain number, which will increase with earlier diagnosis, are the ones who are performing perineal prostatectomy. Perineal surgery for carcinoma is more difficult than for benign hyperplasia. Those who have no success with this route in benign cases and therefore elect the suprapubic route cannot expect their results in the more difficult condition of cancer to be any better. Suprapubically the attack on cancer is helpless except to remove an associated obstructing enlargement or give bladder drainage.

FRANK HINMAN, San Francisco.

#### REFERENCE

1. Arthur L. Chute: Bost. M. & S. J., 197: 1207-1213, 1927.

#### Syphilology

**Viability of *Spirochaeta Pallida*.**—Some surprises have been revealed by studies on the viability of *Spirochaeta pallida* outside the body. It is commonly supposed that when an exudate or other matter containing spirochetes gets cold it is no longer infectious—consequently the possibility of infection from toilets, douche-tips, and so on, is not generally conceded.

Motility is not a reliable criterion of life, for biological methods have shown spirochetes to be

still virulent after motility has ceased. However, motility has been observed to persist in cover-glass preparations fifty days (Beer), four weeks (Arning and Klein), twelve days (Mierowsky), four days (Hartmann), two days (Mucha and Landsteiner), 24-48 hours (E. Hoffmann), and 5-6 hours (Eitner). Zinsser and Hopkins kept *Spirochaeta pallida* alive for 11½ hours in a moist towel at room temperature in daylight. Reasoner mixed serum expressed from testes of syphilitic rabbits with distilled water and tap water and noted motility after four hours. Rubin and Szentzkysaly noted motility in a hanging drop for five days. Spirochetes have been observed in capillary tubes and reported still motile after several weeks by numerous authors. Reasoner observed motile spirochetes after 56 hours in testes excised from syphilitic rabbits; Haythorn and Lacy put similar testes in an ice-box and found spirochetes contained therein to regain motility at the end of 5-8 days. They successfully inoculated a rabbit with material taken from a syphilitic stillbirth 26 hours after delivery; M. Koch succeeded in a similar experiment with material from a congenital-syphilitic child three days after death. Truffi reported motile spirochetes taken from the primary lesion of a corpse 52 hours after death. Werther repeatedly demonstrated living spirochetes in livers of syphilitic fetuses which had been kept in an ice-box for eleven days. The danger of infections from necropsies during the first twenty-four hours is very great. E. Hoffmann has found twenty such infections reported in the literature and one is known to me. Several of these have been unusually malignant. Inoculation experiments have been successful with chancres extirpated 96 hours from rabbits (Zurhelle and Stempel). At ice-box temperature the life of *Spirochaeta pallida* is prolonged for months. Krantz exposed spirochetes at -20° C. for one hour and saw them regain motility after two days. Kissmeyer obtained successful subcultures from cultures which had been kept at -16° for three months. Oelze sprayed cover-glass preparations and capillary tubes containing *Spirochaeta pallida* with ethylchlorid till frosted, then noted resumption of motility on thawing. Arnheim reported survival of spirochetes held at 60° C. for five minutes, Zethnow confirmed this but reported they were killed at 60° C. for 20 minutes, but not at 50° C. for 20 minutes.

In the light of these observations one must acknowledge that accidental infections from douche-tips, toilet seats, towels, and so on, are not beyond the realm of possibility.

MERRILL HOLLINGSWORTH, Los Angeles.

#### Immunology

**Rate of Development of Pneumococcus Immunity.**—Inasmuch as pneumonia is a self-limiting disease usually ending by crisis or lysis between the seventh and tenth days, three to five days are frequently afforded in which an at-



tempt may be made to produce active immunity. Barach<sup>1</sup> of the department of medicine of Columbia University, New York City, has recently reported experimental evidence that an effective immunization is possible within this short period of time.

Barach injected mice intraperitoneally with special vaccines prepared from early, highly virulent cultures of pneumococci, and found the onset of definite immunity on the third day after the injection. In some mice the immunity was sufficient by the third day to protect against 10,000 to 100,000 M. L. D. of the infectious agent. The immunity increased markedly to the fifth day and remained approximately stationary till the seventh day. Barach found that this early antipneumococcus immunity is specific for the pneumococcus type used. Whether or not patients with lobar pneumonia will react in the same way was not determined by him.

W. H. MANWARING, Stanford University.

#### REFERENCE

1. Barach, A. L.: *Proc. Soc. Exper. Biol. and Med.*, 1928, 25, 558.

#### Dermatology

**O**rbicular Eczema.—Regional types of various dermatoses are often, and justly so, considered as separate clinical problems because of the special clinical factors peculiar to each anatomic locality.

Orbicular eczema is chosen here as a subject of clinical discussion because of its comparative frequency and its alleged intractability.

Not uncommonly patients with orbicular eczema consult the ophthalmologist first, being under the impression that their condition might be caused by some ocular abnormality. In fact, some of these eczemas do develop while the patient is under the ophthalmologist's care for some ocular disorder.

Orbicular eczemas may involve one or both of the eyelids or supra- and infra-orbicular regions. Morphologically they may be very acute with a good deal of inflammatory edema and exudation or very chronic with dry, scaly infiltrated patches.

The condition is very often associated with a distressing itching and discomfort.

The common reason for therapeutic failure in such cases is that they are routinely treated as if all were of the same type.

There are at least four different types of orbicular eczemas, each of which requires individual treatment and handling.

The type of the greatest interest to ophthalmologists is the eczema developing secondarily to some ocular disturbance, associated with profuse conjunctival discharge. These eczemas are usually

of a weepy exudative character and are often associated with edema and great irritability of the skin. Not uncommonly they are caused or aggravated by an idiosyncrasy of the skin to ophthalmologic remedies such as dionin, silver nitrate, etc.

These cases require above all protective and soothing applications such as Burrow's solution and soothing creams.

In some cases eczema is an extension of blepharitis and is merely an expression of the general exudative diathesis and scrofula. In these cases systemic tonic treatment is the main therapeutic consideration.

Both of these varieties are often associated with pyogenic infection, which fact is readily disclosed by the development of well-defined circinate borders, bulky heavy crusts, and a tendency to rapid extension. These cases are benefited by mild antiseptic ointments and lotions such as 1 to 2 per cent of mercury ammoniate and lotio nigra.

Still another type of orbicular eczema is the seborrheic. This type is characterized by a selective localization of the lesions on the eyebrows, with a tendency to descend and invade the nasolabial folds. The lesions themselves are characterized by heavy yellowish crusts and only mild itching. These cases respond well to mild antiseptic ointments containing salicylic acid, resorcin and sulphur. Dietetic restriction of fat, carbohydrates and sugars is essential.

The most resistant and possibly the most important clinically is the type represented by dry, infiltrated, extremely itchy patches which may be located in any part of the orbicular region. These cases are as a rule of systemic, dietetic or metabolic origin, and call for careful study and regulation of the diet.

Therapeutically it is important to remember that, due to a peculiar tender texture of the skin in the orbicular region, irritating and strong local applications are decidedly contraindicated.

It is also of practical interest to know that, due to the close proximity of the eyes, various modalities of the ultra-violet light, so beneficial in superficial forms of eczemas, are not suitable for therapeutic purposes in orbicular eczemas.

Our main resource in these cases is x-ray radiation which, if used judiciously in small fractional doses such as one-sixth or one-eighth of a skin unit with a spark gap of 4 to 5 inches, is perfectly safe and admirably effective. The most serviceable ointment is the one containing anesthesin 2 to 4 per cent and naphthalan (Steinwe) 4 to 10 per cent in lanolin or plain Lassar paste.

In conclusion I wish to emphasize the utmost importance of individualization of treatment of the various types of orbicular eczemas and the correct interpretation of the skin lesions.

MOSES SCHOLTZ, Los Angeles.

# STATE MEDICAL ASSOCIATIONS

## CALIFORNIA MEDICAL ASSOCIATION

WILLIAM H. KIGER.....President  
MORTON R. GIBBONS.....President-Elect  
EDWARD M. PALLETTE.....Vice-President  
EMMA W. POPE.....Secretary

### OFFICIAL NOTICE

Official notice is herewith given of certain proposed amendments to the Constitution and By-Laws of the California Medical Association which will come before the House of Delegates of that association at the 1929 annual session at Hotel Coronado.

These various proposed amendments to the present Constitution and By-Laws may be found in CALIFORNIA AND WESTERN MEDICINE in the issue of August, 1927, pages 244 to 258, and in the August, 1928 issue of CALIFORNIA AND WESTERN MEDICINE, pages 113 to 138.

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**Arrangements Committee 1929 Annual Session.**—Dr. Mott Arnold, chairman of the Committee of Arrangements for the 1929 session of the California Medical Association, has appointed the following subcommittees to handle the local needs of the convention.

**Finance**—Chairman, William H. Geistweit, Jr.; Edwin H. Crabtree, Chester O. Tanner.

**Publicity**—Chairman, Clarence E. Rees; Rawson J. Pickard, George B. Worthington.

**Invited Guests**—Chairman, Lyell C. Kinney; James F. Churchill, Clarence E. Rees, Mott H. Arnold, James W. Sherrill.

**Commercial Exhibit**—John C. Yates.

**Scientific Exhibit**—Chairman, Harold A. Thompson; Hervey K. Graham, Willard H. Newman.

**Entertainment**—Chairman, Andrew B. Wessels; E. P. Chartres-Martin, Thomas O. Burger.

**Hotel Reservations**—Chairman, Frank Carter; Charles W. Lane, Edward A. Blondin.

**Meeting Places**—Chairman, Will H. Potter; Andrew J. Thornton, Louis J. Strahlmann.

**Entertainment of Visiting Ladies**—Chairman, Mrs. Homer C. Oatman.

**Information and Registration**—Chairman, David C. Higbee; James D. Bobbitt, Donald K. Woods.

**Women Physicians**—Chairman, Marjorie Potter; Olive B. Cordua, Martha Welpton.

**Golf**—Chairman, Edgar C. Lee; Samuel A. Durr, C. Ray Lounsberry.

**Medical Reserve**—Chairman, John C. Dement; Alfred E. Banks.

**Naval Activities**—Chairman, Captain R. Spear; Fraser MacPherson, Charles William Brown.

**Transportation**—Chairman, James W. McColl; C. Pennell Baxter, S. J. McClendon.

### COMPONENT COUNTY SOCIETIES

#### ALAMEDA COUNTY

The first meeting of the Alameda County Medical Association after the vacation period was held in the Ethel Moore Memorial Building in Oakland, on August 20. Doctor Lohse was in the chair. The program of the evening was prepared and presented by the staff of the Baby Hospital. Dr. Edith Meyers read the first paper, which was the presentation of a case report of an infant suffering from a glioma arising in the region of the fourth ventricle. The case was discussed in considerable detail by Dr. Frederick

Reichert, who demonstrated diagnostic measures and showed x-ray films. The second paper of the evening was a discussion of upper respiratory tract infections in gastro-intestinal upsets by Clifford Sweet. Doctor Sweet pointed out that the usual gastro-intestinal upsets were not due to pathology in this tract, but were the result of toxins produced elsewhere. These toxins were, in most instances, infections in the upper respiratory tract, such as cryptic tonsils, infected adenoids, middle-ear infections, etc. Doctor Sweet said the etiology in the cases in question should be first sought in the respiratory tract and that food and the intestinal tract should be looked to last as the cause of the trouble. The third paper of the evening was by Dr. Hobart Rogers on rheumatic diseases in children. Doctor Rogers spoke briefly upon the etiology of rheumatic fever, discussing the part played by such predisposing factors as crowding, dampness, cold, fatigue, etc., together with a brief discussion of the streptococcus involved, and the use of specific sera as prepared by immunization of the horse or the bovine. He also discussed the use of soluble antigens in its treatment. Doctor Rogers exhibited two cases in which cardiac involvement was a prominent feature. The fourth paper of the evening was on "Some Bone Conditions in Children" by Dr. F. W. Holcomb. Doctor Holcomb limited his discussion to fractures in and about the elbow joint, pointing out the advantages and shortcomings of the Jones method of handling these conditions.

Doctor Rothganger, chairman of the building committee, reported on a plan to provide a new building to house the assembly room and the library of the association.

GERTRUDE MOORE, *Secretary.*

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#### CONTRA COSTA COUNTY

The first of the fall meetings of the Contra Costa County Medical Society was held in Richmond on the evening of the 15th of September, Dr. St. John Hely, president, presiding.

Dr. Dudley Smith of San Francisco read a very instructive paper on "Cancer of the Rectum," pointing out the greater percentage of advanced cancer because of failure of early diagnosis, which in many cases could be disclosed by digital examination and inspection of the rectum by proctoscopy. Interesting lantern slides were shown depicting the various stages of the operation, etc.

Miss Harris of the Pacific Division of the American Red Cross spoke before the society explaining the service of visiting nursing, which they hope to institute in Richmond territory shortly.

Dr. L. H. Fraser was readmitted to the society on transfer from the Alameda County Medical Association.

A light luncheon was enjoyed at Martin's Grill following the meeting.

Those present were: Doctors J. W. Bumgarner, P. C. Campbell, L. St. John Hely, L. H. Fraser, Rosa Powell, Mrs. Redman, R. N., Richmond; S. N. Weil, Selby; F. L. Horne, J. M. McCullough, W. A. Rowell, Crockett; I. O. Church, H. W. Fetter, Martinez.

S. N. WEIL, *Secretary.*

#### ORANGE COUNTY

The regular meeting of the Orange County Medical Association was held at the Orange County General Hospital, Tuesday evening, September 4, at 8 p. m.

The paper of the evening was presented by Dr. Merrill W. Hollingsworth of Santa Ana. His subject

was, "The History of Syphilis." A large collection of rare old volumes obtained in this country and in Europe was shown. Pictures of other original writings and of patients were projected on the screen.

Dr. J. M. Burlew of Santa Ana reported the case of a patient coming to him with an enlarged uterus with no outlet, evidently due to obliteration of cervical canal after amputation of the cervix. Doctor Wehrly reported a case of carcinoma of gastro-intestinal tract.

After adjournment of the meeting a fine lunch was served.

F. HAROLD GOBAR, *Secretary*.

#### SAN DIEGO COUNTY

All the medical activities, including the county society and the staffs of the various hospitals, are resumed with the coming of September.

The opening meeting of the medical society after the summer recess will be addressed by Dr. Samuel Ayres of Los Angeles, who will speak upon "Some Phases of Dermatology." It will be preceded by a dinner at the San Diego Athletic Club.

Dr. Mott Arnold, chairman of the committee on arrangements for the next state meeting which will be held in Coronado, has completed the organization of his working machine and announces the following committees:

Finance—William H. Geistweit, Jr., chairman; Edwin H. Crabtree, Chester O. Tanner.

Publicity—Clarence E. Rees, chairman; Rawson J. Pickard, George B. Worthington.

Invited Guests—Lyell C. Kinney, chairman; James F. Churchill, Clarence E. Rees, Mott H. Arnold, James W. Sherrill.

Commercial Exhibit—John C. Yates.

Scientific Exhibit—Harold A. Thompson, chairman; Hervey K. Graham, Willard H. Newman.

Entertainment—Andrew B. Wessels, chairman; E. P. Chartres-Martin, Thomas O. Burger.

Hotel Reservations—Frank Carter, chairman; Charles W. Lane, Edward A. Blondin.

Meeting Places—Will H. Porter, chairman; Andrew J. Thornton, Louis J. Strahlmann.

Entertainment of Visiting Ladies—Mrs. Homer C. Oatman, chairman.

Information and Registration—David C. Higbee, chairman; James D. Bobbitt, Donald K. Woods.

Women Physicians—Marjorie Potter, chairman; Olive B. Cordua, Martha Welpton.

Golf—Edgar C. Lee, chairman; Samuel A. Durr, C. Ray Lounsbury.

Medical Reserve—John C. Dement, chairman; Alfred E. Banks.

Naval Activities—Captain R. Spear, chairman; Fraser MacPherson, Charles William Brown.

Transportation—James W. McColl, chairman; C. Pennel Baxter, S. J. McClendon.

The well-known *esprit de corps* of the San Diego society assures a smooth-working entertainment machinery, and all who visit the 1929 meeting will receive a warm welcome and entertainment to look back upon with pleasant memory. Make your hotel reservations early and plan to bring the family. ROBERT POLLOCK.

#### SAN FRANCISCO COUNTY

##### Tribute to Dr. Frank Benton Carpenter

At the meeting of the board of directors of the San Francisco County Medical Society on September 11, 1928, the following tribute to Dr. Frank Benton Carpenter was read and resolutions were passed that copies be sent to Mrs. Carpenter and to CALIFORNIA AND WESTERN MEDICINE, and that the board of directors extend to Mrs. Carpenter their deepest sympathy for the death of her late husband, Dr. Frank Benton Carpenter.

With the death of Doctor Carpenter there passed from among us one whose friendship was a priceless gift.

"A man that fortune's buffets and rewards hast ta'en with equal thanks" he ever met his fellows with



Dr. Frank Benton Carpenter  
1858-1928

a warm and happy greeting which then lightened their burdens and now is a precious memory.

Doctor Carpenter was born December 29, 1858, in Prairie du Chien, Wisconsin, and died July 16, 1928, in Logan, Utah. His father, Charles Carpenter, died when his son was but eight years old. His mother, Malinda Alexander, age eighty-four, and his stepfather, W. T. Alexander, age eighty-six, are still living in Campbell, California.

Doctor Carpenter married Nettie Pepper of Vermont in 1883, and graduated from the College of Physicians and Surgeons of Columbia University the same year. He came to San Francisco, and after a few years of successful general practice made surgery his specialty.

He gave freely of his time and energy to both his county and state societies, and was a familiar and welcome figure at almost every meeting for many years. In 1902 he was elected president of the San Francisco County Medical Society and in the same year became president of the California State Medical Association.

Until shortly before his death he was a member of the board of directors of the San Francisco Polyclinic and chief of the department of gynecology. He was visiting gynecologist to the San Francisco Hospital for many years. He was a Fellow of the American Medical Association and of the American College of Surgeons, and a member of the California Academy of Medicine. He served a term on the State Board of Medical Examiners. He was a member of the Commonwealth and Union League Clubs and took an active interest in both.

Doctor Carpenter's outstanding characteristic was a happy, uniform and generous disposition that made and kept for him many firm and lasting friends.

His loving care of his father and mother was typical of the man. He was an enthusiastic hunter and fisherman, but above all he loved beautiful scenery, and even in his last years no effort was too great, no trip too arduous to prevent his reaching some spot whose grandeur he wished to enjoy. And at the end death



came to him when he was returning from a visit to beautiful Zion Park of Utah.

With the passing of Doctor Carpenter his patients have lost a faithful, skilled and beloved adviser; his father and mother a dutiful and honored son; his wife a loyal, thoughtful and loving companion of forty-five years, and the San Francisco County Medical Society a member whose high character, devotion to the ideals of his profession and sunny, steadfast disposition endeared him to all.

T. HENSHAW KELLY, *Secretary.*

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#### SAN JOAQUIN COUNTY

The stated meeting of the San Joaquin County Medical Society was held Thursday evening at 8:30 p. m., September 6, in the hall of the Medico-Dental Club, 242 North Sutter Street.

The meeting was called to order at 8:30 p. m., Dr. R. T. McGurk presiding. Twenty-one members were in attendance. Doctors E. L. Blackmun, J. F. Blinn, Fred J. Conzelmann, J. T. Davison, J. F. Doughty, F. P. Gallegos, Minerva Goodman, R. R. Hammond, Samuel Hanson, J. P. Hull, Bernhard V. Looser, Grace McCoskey, R. T. McGurk, F. G. Maggs, F. J. O'Donnell, B. J. Powell, Dewey R. Powell, George H. Sanderson, Margaret Smyth, C. V. Thompson, L. E. Tretheway, and Philip Arnot of San Francisco, guest and speaker of the evening.

The minutes of the previous meeting were read and approved.

The transfer of Dr. Bernhard V. Looser from Colusa County Medical Society was read.

Moved by the secretary, seconded by Doctor Gallegos, that Doctor Looser be accepted as a member of this society. The motion carried.

The chairman introduced Dr. Philip Arnot, who spoke on induction of labor by Voorhees bag.

He gave an analysis of eighty-five patients in whom he had used the bag. The doctor gave an excellent account of the technique of using the bag which he stated could be used at home as well as in hospitals. An assistant is needed to put bag in place. When bag is in place it is filled with sterile water or salt solution. He used the bag in one out of eight patients. In most patients a pathological condition existed, such as hypertension or albuminuria. Forty-seven were primipara and thirty-eight multipara. The oldest, age thirty-eight, with a blood pressure of 220, and the youngest, age sixteen years, with eclampsia.

The indications for use of bags are: (1) Hypertension and albuminuria, blood pressure 140 to 170, with excessive albumin in urine present six weeks before term and not improving or getting worse with treatment. Thirty patients in Arnot's series had this condition. (2) False or indefinite labor pains when patient is in labor for twenty-four hours without dilation of cervix or large child. Eight patients had this condition, coupled with ruptured membranes, which is an additional reason for use of bag. (3) Convenience for patients, when uncomfortable and out of breath. (4) Premature rupture of membranes without pain. Give castor oil and quinin; wait not longer than twenty-four to thirty-six hours, then use bag. It is safest for mother and baby to use bag after twenty-four hours. (5) Placenta previa. (6) Premature separation of placenta and dead fetus.

Failures: Three cases. One case of hypertension albuminuria and fever. Two cases physician was not present and bag came out in eight hours. Make rectal examination to see whether cord is down and cervix dilated. Twenty-five patients needed stimulation with pituitrin and massage. In four cases only massage was used. The secret of success in use of bag is personal supervision. As a rule labor commences in two hours and forty-five minutes after bag has been placed in uterus. In many cases labor starts within an hour, and in primipara occupies eight hours and in multipara five hours.

Usually labor is completed in three hours less time with bag. Labors are shorter and easier with bag.

Instrumental delivery: Fourteen cases out of eighty-five. Causes for use of instruments, large child and unnatural presentation.

Complication: Prolapse of cord, one case. Prolapsed cord and ruptured membranes, two cases. Rupture the membrane between pains and let fluid out slowly and cord will not come down.

Total deaths in eighty-five cases, eighteen or 21 per cent. Eight were macerated; one case premature separation of placenta; two babies died of cerebral hemorrhage; two other babies died prematurely. Two babies died due to prolapsed cord.

Maternal death rate was high, but all these cases in which bag was used had a pathological condition which was the indication for the use of the bag.

Objection to use of bag: (1) Dislodges head. (2) May rupture membranes and favor infection. (3) Frequency of prolapsed cord. (4) Use of bags requires time and presence of physician. Physicians usually do not wish to give the time. If you do not wish to give the time do not use the bag. Pains must be continued after bag is out. Other methods for induction of labor: (1) Castor oil and quinin successful in 60 per cent of cases. (2) Cervical packs favors infection of mother.

Bougis: Danger of perforating uterus. Pituitrin starts labor and may be used with the bag to keep the pain coming. It is not always a safe method; especially in hypertension cases. It is safer to give pituitrin when cervix is already dilated. Bags are used to induce labor, and in 96.5 per cent of the cases labor is shortened.

An interesting discussion followed in which Doctors McGurk, Gallegos, Maggs, Hanson, Sanderson, Tretheway, and Hammond participated.

In behalf of the society the chair conveyed appreciation and thanks to the speaker of the evening.

The chair declared the meeting adjourned at 10 p. m.

FRED J. CONZELMANN, *Secretary.*

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#### SANTA BARBARA COUNTY

The regular meeting of the Santa Barbara County Medical Society was held at the St. Francis Hospital Monday evening, September 10, at 8:30 o'clock, with President Sansum in the chair.

There were present thirty members of the society.

The minutes of the June meeting were read and approved.

Unanimous ballot for membership was cast by the society for Dr. P. A. Gray, a new member, and the transfer to this society of Dr. F. E. Blaisdell from the Ventura County Society and Dr. Robert Hare from the Cook County, Illinois, Society.

Doctor Crandall then asked permission from the president to speak on the existing conditions in the County Health Department. He explained the problems of a health officer who was having his powers usurped by the chairman of the Board of Supervisors. Following his talk the matter was discussed by Doctors Roome, Brush, Koefod, Brown, Wells, and Henderson.

Doctor Henderson then moved, with a second, that this society go on record as recommending to the Board of Supervisors that they delay action. Doctor Ryan then moved an amendment that the secretary, with two appointed members, draw up a resolution in suitable form and present it to the meeting for adoption. The president appointed Doctors Rexwald Brown and Roome, who drew up the following resolution, which was unanimously adopted and ordered presented to the Board of Supervisors previous to their meeting, September 11:

"Gentlemen: The Santa Barbara County Medical Society, in regular meeting assembled this evening, by resolution passed unanimously, request your honorable body to postpone action on the matter of dismissal of the county health officer until the county medical society has had an opportunity to hear both sides of the controversy.

"The subject of public health and the efficient admin-

istration thereof is of vital importance to the people of Santa Barbara County and of this society. Public health administration should merit and have the whole-hearted support and cooperation of the county medical society as well as of the Board of Supervisors. We feel that the dignity attached to this office warrants judicial investigation before final action is taken."

Doctor Gray then gave a paper on "Two Cases of Peptic Ulcer with Symptoms of Cancer," which was discussed by Doctors Geyman, Brush, and Robinson.

Doctor Evans then gave a paper on "Fibrosis of the Myocardium," which was discussed by Doctors Koefod and Sansum.

Doctor Brown followed with a paper on "The Menace to Medicine" in which he stressed how the control of medicine was being usurped by the laity. This paper was discussed by Doctors Means and Ryan. Doctor Means in his discussion made mention of the unfavorable publicity Santa Barbara and the State Teachers College are getting, and he therefore moved that the society go on record as endorsing the outcome of the Selle case and send the following letter to the Superintendent of Public Instruction at Sacramento:

"The Santa Barbara County Medical Society at a regular meeting unanimously passed the following resolution:

Inasmuch as the Selle case has been tried in the Superior Court, this society wishes to go on record as having entire confidence in the court's decision and feels that as this matter has been definitely decided and settled, the Superintendent of Public Instruction need give no further thought nor take any further action in this case, regardless of what communications to the contrary he may receive."

Doctor Sansum then suggested a dinner meeting upon the return of Doctor Nuzum, but no action was taken.

There being no further discussion the meeting adjourned.

W. H. EATON, *Secretary*.

## CHANGES IN MEMBERSHIP

### New Members

Alameda County.—William H. Baughman, Charles E. Mordoff, Harry W. Plath, Oakland; Leslie T. Peery, Berkeley.

Los Angeles County.—John N. Agan, Harold E. Crowe, William W. Eldredge, Arnold L. Gibson, Alfred G. Henrich, Sam G. Kreinman, Abram Lipkis, Claude A. Macdonald, Joseph Maurer, Paul A. Quaintance, Philip E. Rothman, Rachelle Seletz, Emery Singer, Glenn L. Voorhees, Edith L. Whitcomb, Los Angeles; Leon G. Campbell, Pasadena; Axel W. Swenson, Van Nuys.

San Diego County.—Roger I. Clapp, Roy M. Ledford, May Turner Riach, Frank B. Schroeder, Harry J. Stewart, San Diego.

### Transferred Members

George P. Purlenky, from San Francisco to Humboldt County.

T. R. Trick, from Merced County to Los Angeles County.

Herbert R. Stolz, from Sacramento to Alameda County.

### Deaths

**Camel, E. George.** Died at Alameda, May 15, 1928, age 30 years. Graduate of Creighton University College of Medicine, Nebraska, 1922. Licensed in California, 1923. Doctor Camel was a member of the Alameda County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

**Campbell, Ralph R.** Died at Los Angeles, August 20, 1928, age 61 years. Graduate of Jefferson Medical College, Pennsylvania, 1890. Licensed in California, 1900. Doctor Campbell was an honorary member of the Los Angeles County Medical Association, a

member of the California Medical Association, and a Fellow of the American Medical Association.

**Griffin, Joseph Frank.** Died at Los Angeles, July 24, 1928, age 63 years. Graduate of Vanderbilt University, Tennessee, 1890. Licensed in California, 1921. Doctor Griffin was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

**Holland, Joseph H.** Died at Riverside, May 31, 1928, age 73 years. Graduate of General Medical College, Illinois, 1888. Licensed in California, 1897. Doctor Holland was a member of the Riverside County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

**Kellogg, Arthur Bartlett.** Died at Los Angeles, September 9, 1928, age 56 years. Graduate of University Medical College, New York, 1894. Licensed in California, 1922. Doctor Kellogg was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

**McBride, James H.** Died at Pasadena, September 1, 1928, age 79 years. Graduate of Bellevue Hospital Medical College, New York, 1873. Licensed in California, 1877. Doctor McBride was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

Report of Foot-and-Mouth Disease Commission Supports United States Eradication Methods.—Acting under authority of Congress, the commission on the foot-and-mouth disease went to Europe in May, 1925, to make observations and to perform original research for the purpose of determining the best methods of suppressing outbreaks that may later occur in the United States. Its members were Peter K. Olitsky of the Rockefeller Institute of Medical Research, Jacob Traum of the University of California, and Harry W. Schoening of the Bureau of Animal Industry, United States Department of Agriculture. Owing to the highly virulent nature of foot-and-mouth disease and the fortunate freedom of the United States from its presence, the commission performed its work abroad in countries where the disease is present.

The Results in Brief.—The commission's studies show that animals are most likely to spread the contagion in the early stage of the disease, that practically all cloven-footed animals are susceptible, that the greatest source of danger is removed by slaughter and proper disposal of the involved animals, that the virus may remain alive for one or two months and perhaps longer, and that the disinfecting of premises and restocking of previously infected farms should be conducted under official veterinary supervision.

The commission indorses the slaughter and quarantine method with supplementary safeguards, as regularly used for eradicating the disease on occasions when it appeared in the United States. The main reason for prompt slaughter, the report states, is to remove as soon as possible the greatest source of active virus. Even though the disease spreads rapidly, involving practically all cloven-footed animals, it frequently takes from one to several weeks before all susceptible animals in a herd have contracted the disease and in turn have passed through the highly infectious stage. During this entire period each animal or group of animals becomes a source of danger, in many instances even before any evidence of the disease is seen. The slaughter method removes these potential reservoirs of virus.

Slaughter Method Combines Effectiveness with Economy.—"In support of the value of the slaughter method," the commission added, "it may be stated that in the United States the disease has been eradicated and in Continental European countries it has not been appreciably diminished."

## EXTENSION LECTURE PROGRAM

## SUBJECT INDEX

## Bacteriology and Pathology

Barrow, John V.

## Dermatology and Syphilology

Alderson, Harry E. Templeton, H. J.  
Hollingsworth, M. W. Way, Stuart C.

## Eye, Ear, Nose, and Throat

Barkan, Hans Hebert, Arthur W.

## General Medicine

Brown, Philip King Pierson, Philip H.  
de River, J. P. Pulford, D. Schuyler  
du Bray, Ernest S. Read, J. Marion  
Kilfoy, E. J. Rowe, Albert H.  
Kruse, Fred H. Shepardson, H. Clare

## (a) Allergy

Hurwitz, Samuel H. Rowe, Albert H.

## (b) Cardiology

Kilgore, Eugene S. Read, J. Marion  
Langley, Robert W. Sampson, John J.  
Spiro, Harry

## (c) Carcinoma

Duncan, Rex

## (d) Endocrinology

Lisser, Hans

## (e) History of Medicine

Codellas, Pan S. Gilcreest, Edgar L.

## (f) Preventive Medicine

Kellogg, W. H.

## (g) Tuberculosis

Pierson, Philip H. Rothschild, Max  
Voorsanger, William C.

## General Surgery

Bell, Leo P. Gilcreest, Edgar L.  
Brooks, LeRoy Mentzer, Stanley H.  
Gehrels, Ernst Woolsey, John Homer

## (a) Brain and Spinal Cord Surgery

Towne, E. B.

## (b) Plastic Surgery

Bames, H. O. de River, J. P.  
Pierce, George Warren

## Gynecology and Obstetrics

Emge, L. A.

## Neuropsychiatry

Catton, Joseph Podstata, V. H.  
Harvey, Richard W. Wolfsohn, Julian M.

## Orthopedics

Gottlieb, A. Stewart, Steele F.

## Pediatrics

Sampson, Joseph A. Wolff, Ernst

## Radiology

Duncan, Rex Lawson, John D.

## Urology

Cross, W. W. Kilfoy, E. J.  
Ferrier, Paul A. Kreutzmann, Henry A. R.  
Gibson, Thomas E. Redewill, Francis S.  
Jacobs, Louis Clive Stevens, William E.  
Wesson, Miley B.

## AUTHOR'S INDEX

Harry E. Alderson, M. D., and Stuart C. Way, M. D.,  
320 Medico-Dental Building, 490 Post Street,  
San Francisco.

1. The Determination of Malignancy in Tumors of the Skin. (Lantern slides.)
2. Dermatoses Commonly Seen in General Practice. (Lantern slides.)
3. A Skin and Syphilis Clinic will be held of Locally Selected Cases (five or six).

H. O. Bames, M. D., 512 Pacific National Building,  
Los Angeles.

1. The Correction of Facial Disfigurements.
2. Professional and Lay Aspects of Cosmetic Surgery.
3. The Surgical Treatment of Lipomatosis of Abdomen, Hips and Thighs.

Hans Barkan, M. D., 921 Medico-Dental Building, 490  
Post Street, San Francisco.

1. Headaches Due to Ocular Causes.
2. Industrial Aspects of Eye Injuries.
3. Modern Methods of Cataract Operations.

John V. Barrow, M. D., 2007 Wilshire Boulevard, Los  
Angeles.

1. Human Intestinal Protozoa in Relation to Chronic Diseases.
2. The Etiology and Treatment of Chronic Arthritides as Forecast by Physical and Laboratory Examination.
3. The Liver and Intestinal Tract in Relation to the Anemias.

Leo P. Bell, M. D., Woodland Clinic, Woodland.

1. Diseases of the Spleen and Their Treatment.
2. Preoperative Preparation and Surgical Treatment of Exophthalmic and Thyrotoxic Goiter.
3. Diagnosis and Surgical Treatment of Carcinoma of Rectum and Sigmoid.

LeRoy Brooks, M. D., 731 Medico-Dental Building,  
490 Post Street, San Francisco.

1. Surgical Treatment of Goiter.
2. Ptois of the Cecum and Ascending Colon, Diagnosis and Treatment.
3. Preoperative Preparation and Postoperative Treatment in the Poor Surgical Risk.

Philip King Brown, M. D., 401 Medical Building, 909  
Hyde Street, San Francisco.

1. Unusual Effects of Local Infections.
2. Heart Disease.
3. Treatment of Peptic Ulcer.

Joseph Catton, M. D., 609 Howard Building, 209 Post  
Street, San Francisco.

1. Medicine and Law.
2. Treat the Patient as Well as the Disease.
3. Organic Neurological Diseases Misdiagnosed as Functional Disease.

Pan S. Codellas, M. D., Schroth Building, 240 Stock-  
ton Street, San Francisco.

1. Egyptian Medicine. (Lantern slides.)
2. Assyro-Babylonian Medicine. (Lantern slides.)
3. Minoan and Etruscan Medicine. (Lantern slides.)

W. W. Cross, M. D., Franklin Building, 1624 Franklin  
Street, Oakland.

1. Infection of the Urinary Tract. (Lantern slides.)

J. P. de River, M. D., Flood Building, 870 Market  
Street, San Francisco.

1. Plastic Surgery in Military and Civil Practice.
2. Cosmetic Surgery.
3. The Doctor Turns Philosopher.

Ernest S. du Bray, M. D., 510 Medico-Dental Build-  
ing, 490 Post Street, San Francisco.

1. The Management of Diabetes Including a Consideration of Certain Common Complications, Such as Infection, Gangrene, Coma, and Insulin Reactions.



**Rex Duncan, M. D.**, 204 Professional Building, 1052 West Sixth Street, Los Angeles.

1. What the General Practitioner Should Know About Cancer. (For the profession generally.)
2. Surgery in the Treatment of Cancer. (For surgical societies.)
3. Treatment of Uterine Cancer with Observation of More Than Five Hundred Cases Treated During the Past Ten Years. (For the general practitioner, surgeon, and gynecologist.)

**L. A. Emge, M. D.**, 2000 Van Ness Avenue, San Francisco.

1. Menstrual Disturbances and Their Treatment.
2. Office Gynecology.
3. Uterine Displacements—Their Significance and Treatment.

**Paul A. Ferrier, M. D.**, Professional Building, 65 North Madison Avenue, Pasadena.

1. Urinary Tuberculosis.
2. Tumors of the Bladder.
3. Control of Urinary Hemorrhage.

**Ernst Gehrels, M. D.**, 734 Medico-Dental Building, 490 Post Street, San Francisco.

1. The Radical Surgical Treatment of Gastric and Duodenal Ulcer.
2. The Treatment of Gall Stones in the Common Duct.
3. Management of Cancer of the Rectum with Special Reference to Preservation of Bowel Control.

**Thomas E. Gibson, M. D.**, 641 Flood Building, 870 Market Street, San Francisco.

1. The Diagnosis of Adrenal Tumors. (Lantern slides.)
2. Improvements in Perineal Prostatectomy Permitting Primary Wound Closure and Healing of Wounds Without Drainage. (Lantern slides.)

**Edgar L. Gilcreest, M. D.**, 315 Fitzhugh Building, 384 Post Street, San Francisco.

1. John Hunter, His Life and Contributions to Surgery.
2. Some Problems in the Treatment of Elbow Fractures.
3. Arteriovenous Fistula and Its Treatment.

**A. Gottlieb, M. D.**, 1240 Roosevelt Building, 727 West Seventh Street, Los Angeles.

1. Heliotherapy in Joint Tuberculosis (Rollier's System).
2. Treatment of Arthritis Deformans by Physical and Mechanical Means.
3. Obscure Foot Lesions.

**Richard W. Harvey, M. D.**, 711 Fitzhugh Building, 384 Post Street, San Francisco.

1. Combined System Disease. (Lantern slides.)
2. The Care of the Mental Patient.
3. Neuroses in Industrial Medicine.

**Arthur W. Hebert, M. D.**, 819 Flood Building, 870 Market Street, San Francisco.

1. Paranasal Sinus Disease in Children, Manifestation, Diagnosis, and Treatment. (Lantern slides.)
2. The Relation of Paranasal Sinus Disease to Asthma and Hay Fever. (Lantern slides.)
3. What the General Practitioner Should Know About Accessory Nasal Sinus Disease. (Lantern slides.)

**Merrill W. Hollingsworth, M. D.**, 409 First National Bank Building, Santa Ana.

1. General Principles in the Treatment of Syphilis. (Strip films.)
2. Historical Sketches of Syphilis. (Strip films.)

**Samuel H. Hurwitz, M. D.**, 1214 Medico-Dental Building, 490 Post Street, San Francisco.

1. The Relative Importance of Hypersensitiveness

and Infection in Bronchial Asthma. (Illustrative cases.)

2. Diagnosis and Treatment of Bacterial Asthma.
3. Diagnosis and Treatment of Nonseasonal and Atypical Hay Fever.

**Louis Clive Jacobs, M. D.**, 462 Flood Building, 870 Market Street, San Francisco.

1. Diagnosis and Treatment of Lesions of the Posterior Urethra. (Lantern slides and wax models.)
2. The Surgical Prostate and Its Complications. (Lantern slides.)
3. The Infected Prostate and Its Relation to Focal Infection.

**W. H. Kellogg, M. D.**, State Hygienic Laboratory, Berkeley.

1. Anaphylaxis in Relation to the Use of Serums and Vaccines.
2. The Practice of Preventive Medicine.
3. The Prevention of Diphtheria and Scarlet Fever.

**E. J. Kilfoy, M. D.**, 709 Medical Office Building, 1136 West Sixth Street, Los Angeles.

1. Transsacral Anesthesia and Its Relation to General Surgery.
2. Diagnosis and Treatment of Teratoma of the Testicle.
3. Etiology of Peptic Ulcer.

**Eugene S. Kilgore, M. D.**, 724 Medico-Dental Building, 490 Post Street, San Francisco.

1. Precordial Pain—Clinical Types and Significance.
2. Cardiac Neuroses.
3. The Assessment of Circulatory Efficiency.

**Henry A. R. Kreutzmann, M. D.**, 2000 Van Ness Avenue, San Francisco.

1. Diagnosis and Treatment of Urinary Tract Calculi.
2. Diagnosis and Treatment of Urinary Tract Infections.
3. Diagnosis and Treatment of Genital Tract Infections.

**Fred H. Kruse, M. D.**, 916 Fitzhugh Building, 384 Post Street, San Francisco.

1. Recent Advances in Diagnosis and Treatment of Gall-Bladder Disease. (Lantern slides.)
2. Irritable Colon. (Lantern slides.)
3. Peptic Ulcer—Etiology, Diagnosis, and Treatment. (Lantern slides.)

**Robert William Langley, M. D.**, 312 Professional Building, 1052 West Sixth Street, Los Angeles.

1. Coronary Sclerosis—The Clinical Course and Management.
2. Fluoroscopic Study of the Heart. (Lantern slides.)
3. Heart Disease and Its Relation to Obstetrics.

**John D. Lawson, M. D.**, Woodland Clinic, Woodland.

1. Comparative Value of Gastro-Intestinal Series and Cholecystography in Diagnosis of Gall-Bladder Disease. (Lantern slides.)
2. Roentgen Therapy in Treatment of Erysipelas.
3. Use of Radiation in Conjunction with Colloidal Lead in Treatment of Malignancy.

**Hans Lissner, M. D.**, 240 Fitzhugh Building, 384 Post Street, San Francisco.

1. Obesity in Children and Adults—Types and Treatment. (Lantern slides.)
2. Acromegaly. (Lantern slides.)
3. The Uniglandular Origin of Pluriglandular Syndromes. (Lantern slides.)

**Stanley H. Mentzer, M. D.**, Physicians' Building, 516 Sutter Street, San Francisco.

1. What are the Criteria for Cholecystectomy in Cholelithiasis? (Lantern slides.)
2. Cholesterosis of the Gall Bladder—Its Treatment. (Lantern slides.)
3. The Diagnosis and Treatment of Acute Cholecystitis. (Lantern slides.)

**George Warren Pierce, M.D.**, 720 Medico-Dental Building, 490 Post Street, San Francisco.

1. Plastic Surgery in Civil Practice. (Moving pictures and lantern slides.)
2. Plastic Surgery of the Nose and Eye. (Moving pictures and lantern slides.)
3. Cleft Palate and Its Treatment. (Moving pictures and lantern slides.)

**Philip H. Pierson, M.D.**, 811 Medico-Dental Building, 490 Post Street, San Francisco.

1. Recent Observation on Treatment of Pulmonary Diseases in Europe.
2. Etiology, Diagnosis and Treatment of Bronchiectasis.
3. Treatment of Tuberculosis with Some Discussion as to Its Relation to the Varying Types of Disease.

**V. H. Podstata, M.D.**, 404 Union Square Building, 350 Post Street, San Francisco.

1. The Unusual (Problem) Child.
2. The Varieties of Incipient Mental Depression. (Doctor Podstata not available on Mondays.)

**D. Schuyler Pulford, M.D.**, Woodland Clinic, Woodland.

1. The Colloidal Lead Treatment of Malignancy.
2. Dietary Treatment of Epilepsy. (Lantern slides.)
3. The Prevention and Classification of Goiter. (Lantern Slides.)

**J. Marion Read, M.D.**, 1183 Flood Building, 870 Market Street, San Francisco.

1. Blood Pressure—Physiological and Clinical Aspects of Abnormal Pressures. (Lantern slides.)
2. The Patient with a Goiter. (Lantern slides.)
3. The Management of Graves' Disease. (Lantern slides.)

**Francis H. Redewill, M.D.**, 686 Flood Building, 870 Market Street, San Francisco.

1. A New Treatment for Leukoplakia, Malakoplakia and Encrusted Cystitis. (Lantern slides.)
2. Bladder Pressure and Volume Readings with a New Automatic Cystometer as an Aid in Diagnosis. (Lantern slides.)
3. The Successful Treatment of Chronic Prostatitis with the Use of Electrotherapeutic Measures. (Lantern slides.)

**Max Rothschild, M.D.**, 704 Fitzhugh Building, 384 Post Street, San Francisco.

1. The Early Diagnosis of Pulmonary Tuberculosis.
2. The Diagnosis and Treatment of Tuberculosis of Bronchial Glands in Children. (Lantern slides.)
3. The Treatment of Tuberculosis with Specific and Nonspecific Remedies. (Lantern slides.)

**Albert H. Rowe, M.D.**, 242 Moss Avenue, Oakland.

1. Diagnosis and Treatment of Hay Fever and Asthma. (Lantern slides.)
2. Food Allergy in the Etiology of Disease Especially Migraine, Indigestion and Eczema.
3. Insulin Therapy in Diabetes Mellitus.

**John J. Sampson, M.D.**, 291 Geary Street, San Francisco.

1. Heart Sounds and Murmurs—An Analysis of Their Clinical Significance by Electrical Stethoscope Records. (Lantern slides.)
2. Problem of Heart Disease in Public Health.
3. Relation of Heart Disease to Surgery.

**Joseph A. Sampson, M.D.**, Medico-Dental Building, 1127 Eleventh Street, Sacramento.

1. The Incidence and Treatment of Diphtheria Carriers.
2. Simplified Infant Feeding.

**H. Clare Shepardson, M.D.**, 204 Fitzhugh Building, 384 Post Street, San Francisco.

1. Treatment of Diabetes Mellitus in Children and Adults.
2. Diagnosis and Treatment of Diabetic Coma.
3. Complications of Diabetes Mellitus.

**Harry Spiro, M.D.**, 501 Flood Building, 870 Market Street, San Francisco.

1. Consideration of Heart Action in Health and Disease. (Moving pictures of the living animal heart.)
2. Angina Pectoris—Treatment and Diagnosis.
3. Various Cardiac Irregularities, Diagnosis, and Treatment.

**William E. Stevens, M.D.**, 602 Flood Building, 870 Market Street, San Francisco.

1. Urology in Women.
2. Medical and Surgical Conditions of the Urinary Tract During Infancy and Childhood.
3. Urinary Calculi.

**Steele F. Stewart, M.D.**, 817 Westlake Professional Building, 2007 Wilshire Boulevard, Los Angeles.

1. Convalescent Care of Infantile Paralysis.
2. Recent Developments in the Treatment of Spastic Paralysis.

**H. J. Templeton, M.D.**, 3115 Webster Street, Oakland.

1. Dermatologic Manifestations of Syphilis. (Lantern slides.)
2. Electrothermic Treatment of Cutaneous Malignancies. (Demonstration of modalities used.)
3. Common Dermatoses—Diagnosis and Treatment. (Lantern slides.)

**E. B. Towne, M.D.**, 612 Union Square Building, 350 Post Street, San Francisco.

1. Injuries of the Brain and Spinal Cord. (Lantern slides.)
2. Surgery of the Cranial and Peripheral Nerves. (Lantern slides.)
3. Tumors of the Brain and Spinal Cord. (Lantern slides.)

**William C. Voorsanger, M.D.**, 1001 Medico-Dental Building, 490 Post Street, San Francisco.

1. Undiagnosed Cough—A Study of Two Hundred Patients. (Lantern slides.)
2. Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis. (Lantern slides.)
3. Bronchiectasis—Classification, Prognosis, and Treatment. (Lantern slides.)

**Miley B. Wesson, M.D.**, 1275 Flood Building, 870 Market Street, San Francisco.

1. Diseases of the Testicle—Differential Diagnosis and Treatment. (Lantern slides.)
2. Confusing Pyelograms. (Lantern slides.)
3. Diseases of the Prostate—Differential Diagnosis and Treatment. (Lantern slides.)

**Ernst Wolff, M.D.**, Physicians Building, 516 Sutter Street, San Francisco.

1. Classification and Clinical Pictures of Juvenile Tuberculosis of the Lung. (X-ray demonstrations.)
2. Benign Regressing Lung Infiltrations in Juvenile Tuberculosis. (Lantern slides.)
3. Differential Diagnosis of Chronic Chest Conditions in Childhood. (Lantern slides.)

**Julian M. Wolfsohn, M.D.**, 1401 Medico-Dental Building, 490 Post Street, San Francisco.

1. Endocrine Disturbances Associated with Mental and Nervous Diseases.
2. Syphilis of the Central Nervous System. Diagnosis, Modern Treatment with Discussion of Tryparsamid, Malarial and Other Forms of Treatment. (Lantern slides.)
3. What Every Physician Should Know About the Spinal Fluid in Nervous and Mental Diseases.

**John Homer Woolsey, M.D.**, 907 Medico-Dental Building, 490 Post Street, San Francisco.

1. Stomach Surgery of Today. (Lantern slides.)
2. Osteomyelitis of the Jaw. (Lantern slides.)
3. Splenectomy—Indications and Results. (Lantern slides.)

## MISCELLANY

From time to time in this department of California and Western Medicine, appear columns grouped under the following headings: Comment on Current and Recent Articles in this Journal; News; Medical Economics; Readers' Forum; California State Board of Health; and California Board of Medical Examiners. For Book Reviews, see index on the front cover, under Miscellany.

## NEWS

**Lane Medical Lectures.**—The dates for the Lane Medical Lectures, which are to be given by Dr. F. d'Herelle, Directeur du Service Bacteriologique du Conseil Sanitaire, Maritime et Quarantenaire of Alexandria, Egypt, and discoverer of the bacteriophage phenomenon, have been tentatively fixed for the week commencing October 22, 1928. The subjects of the lectures will be as follows:

- October 22—Bacteriophagy.
- October 23—Bacterial Mutations.
- October 24—The Nature of the Bacteriophage.
- October 25—Infectious Diseases.
- October 26—The Phenomenon of Recovery.

In addition Doctor d'Herelle will give a general lecture at Stanford University on "Logic in Biological Researches."

**Semi-Annual Alumni Day.**—Dean Langley Porter has announced that the University of California Medical School will hold its second semi-annual Alumni Day on Friday, November 23, 1928, at the San Francisco Hospital, Potrero Avenue and Twenty-Second Street, San Francisco.

The various departments of the school are now preparing the program, which will consist of operations, ward rounds, exhibits, and short talks on different subjects. Complete details of the program will be mailed to all of the alumni in the early part of November.

A most cordial invitation is extended to the graduates of the Medical School and their friends in the profession to attend the Alumni Day clinics.

In accordance with the custom inaugurated last spring, these Alumni days will be held twice a year—in the spring at the University of California Hospital on the day preceding Charter Day, and in the fall at the San Francisco Hospital on the day before the "big game."

**Dr. William Dick Cutter**, since 1923 dean of the New York Postgraduate Medical School, has been appointed acting dean of the University of Southern California School of Medicine, which will open in September, offering the first year of preclinical medicine. Announcement of the appointment of Doctor Cutter was made by President R. B. von Kleinsmid, who stated that the selection was made after frequent consultation with the medical advisory committee, consisting of Doctors W. W. Beckett, E. A. Bryant, Joseph King, Wayland A. Morrison, and E. N. Pallette, all of Los Angeles.

Enrollment of first-year students in the newly organized school has been limited to fifty-four. More than two hundred applications for admission have been received by the university authorities. From this number the fifty-four best-qualified applicants have been selected. Three years of premedical work in an approved college or university are required for admission.

The newly appointed acting dean is a graduate of Yale University and the Medical School of Johns Hopkins University, from which he received his doctor's degree in 1905. He served his internship at the

French Hospital, New York City, and then joined the hospital staff of the Cooper Queen Mine, Bisbee, Arizona, where he was located from 1906 to 1910. The following year he became professor of physiology and pharmacology in the medical department of the University of Georgia, remaining there until 1919 when he became secretary of the Board of Medical Examiners of New York State. In 1923 he took up his work as dean of the New York Postgraduate Medical School. He resigned that position to accept the headship of the newly constituted school at the University of Southern California.

The new dean is a member of the American Association for the Advancement of Science, the American Medical Association, the New York Academy of Medicine, Phi Beta Kappa, and Sigma Xi.

**University of California Medical School Announces Two Lectures.**—Dean Langley Porter of the University of California Medical School announced yesterday that Dr. Robert J. Ruth, chief of the pharmaceutical division, professional service of E. R. Squibb & Sons, has been obtained to present two public motion picture films in Toland Hall of the University Hospital, Fourth and Parnassus avenues, San Francisco, on Monday, October 8.

The subjects of the pictures will be "Sunshine from the Sea," to be given at 3 o'clock in the afternoon, and "How Science Aids in Controlling Infectious Diseases," to be given at 4 o'clock in the afternoon.

Dean Porter explains that the first picture presents the subject of cod-liver oil and the second depicts the principles of biological therapy, and the methods employed for the manufacture and control of these products. Each film will be preceded by a fifteen-minute talk by Doctor Ruth on the subject to be portrayed. Faculty, students and others interested are cordially invited to attend.—U. C. Clip Sheet.

**Annual Report of the American Association for Medical Progress.**—The third annual report of the American Association for Medical Progress, Santa Barbara County branch, has just been issued by its president, George E. Coleman. Dr. Henry S. Pritchett, LL.D., is the honorary president, and Bernhard Hoffmann and Dr. Rexwald Brown are chairmen of the Lay and Medical Advisory Boards.

During the year letters to members have been issued from time to time upon topics of importance. The necessity for the vaccination of school children has been stressed, the untruthful statements of anti-vaccinationists have been refuted, and the desirability of consulting and having faith only in scientifically trained physicians has been emphasized.

Reprints of articles on "Vaccines and Serums," "Deafness and Research," and "Some Medical Discoveries of 1927" were issued in pamphlet form. Reviews of the last two were given wide publicity throughout the country, and particularly in California. Numerous newspaper articles were also published.

Prizes were offered by the president to the Junior High and High School students for the best essays on scientific subjects, particularly those relating to biology. Also an exhibit of bacterial cultures was placed in the Natural History Museum.

In his report Mr. Coleman stresses the necessity for the scientific education of the young as giving a



true perspective of scientific methods in research, in fostering a thorough understanding of the relation of science to our daily lives, and establishing in the mind of the developing child a proper scientific attitude toward disease and the maintenance of bodily health.

The members of the association are therefore urged to use their influence toward the universal training of the young in elementary biology and as far as possible in other sciences.

Continuing, Mr. Coleman says: "Southern California abounds in quacks, spiritual and psychical healers, and various pernicious antimedical organizations. Some masquerade under the cloak of religion, some as lovers of animals, and still others under the banner of 'personal freedom' (antivaccinationists). All are a menace to the public health, for they initiate, too often successfully, legislation inimical to our physical welfare and to medical progress, and tend to destroy a sane and wholesome attitude toward the search for and teachings of scientific truths.

"It is my intention to continue the same educational policy as in previous years, one which I believe will ultimately bring enlightenment in medical matters to this community far above that found in most cities of similar size anywhere in the country. It should be remembered that the benefits of this educational work accrue primarily to laymen and not to physicians. The latter have not the time for it, and in any event cannot be expected to do it all. The ultimate education of the masses, therefore, rests largely in the hands of the more intelligent laymen cooperating as far as possible with the medical profession. I believe we may assure ourselves that the results of our efforts, though not measurable, will tend to be of more or less widespread benefit, and the object for which we are striving will be ultimately attained."

The official endorsement of the work of the association has been given by President W. W. Campbell of the University of California and Dean Langley Porter of the Medical School.

**The Pan-Pacific Surgical Conference.**—Some years ago the cry was "Go West, young man, go West." And the young, independent thinking men went West and built a great empire. Medically the same progressive self-reliant type of mind also climbed the Rockies and began working on the Pacific Slope. The many contributions that have come forth, the excellency of the universities developed, the high type of hospitals erected, the wonderful research institutions conducted, and the fine caliber of the men in the medical ranks have given a confidence to the men of the Pacific Slope that makes them look still beyond the horizon.

So many of the Eastern medical men's vision failed to see over the Rockies that a group of West Coast medical men headed by Dr. George Swift of Seattle, while in Honolulu some two years ago, lifted their eyes to a wider field. And their cry to the Pacific Coast was "Look West, young men, look West."

The Pacific Ocean is a great lake. There are groups of men doing excellent work in each of the twenty-seven nations bordering on that lake. Do you know the great surgeons of Japan, China, Siam, Australia, New Zealand, etc.? They have ideas, vast experiences, different points of view. Would it not be not only profitable, but a great experience to sit about in a cool tropical paradise and meet these men, exchange experiences, discuss their ideas. Why is it that Japanese women have very little cancer of the breast? Why do the Korean surgeons believe in always aspirating rather than operating on liver abscesses? Why in some countries are postoperative pneumonias almost never seen? Would you like to hear and see what surgery does for elephantiasis and leprosy? And so on. A different crowd, different problems, different points of view. And a vacation.

A four-day trip on the Malolo—a floating palace where one hardly realizes one is aboard ship. The

massive coloring of flowering trees and thousands of night-blooming cereus. Wonderful swimming daily in the waves at Waikiki; the green hills; the blue sky; wonderful golf links; excellent water, milk, and sanitation. Snow-capped mountains within ten miles of the seashore; a miscellaneous assortment of craters, with lava in twisted black masses to broken red dirt with great tree ferns growing in it—the story of creation in action. Bits of color, of old native life; the brilliant color and peoples of the Orient; the blends of East and West—an experiment in mixing of nations with the smile still dominant. Can you get that in New York? New experience with more fun and for less money.

The conference is set for August 14 to 22, 1929. The Australian and Japanese doctors will arrive on the 9th of August. The Malolo arrives on the 14th. More details will follow, but make your plans for next August.

Already enough excellent papers are assured to make the conference a real success, from the professional standpoint, but if there are some who cannot stand even a program in such an environment there is a native drink that can change even the darkest cloud to the rosiest red.

The program to be followed is divided into symposia as follows:

Anesthesia; general surgical technique; fractures; tuberculosis of bones; eye, ear, nose, and throat; cancer; genito-urinary tract; roentgenology; hospital standardization; plastic surgery; goiter; surgery of the thorax; surgery of the upper abdomen; abdominal surgery; gynecology; industrial surgery; leprosy.

**American Public Health Association, Chicago, October 15-19.**—Eleven sections will comprise the fifty-seventh annual convention of the American Public Health Association, which will be held jointly with the meetings of the American Child Health Association and the American Social Hygiene Association at the Stevens Hotel. Sections will be divided into the following main groups: epidemiology; public health education; cancer; vital statistics; industrial hygiene; public health engineering; child hygiene; laboratory; health officers; food, drugs, and nutrition; and public health nursing.

Dr. Herman N. Bundesen, president of the American Public Health Association, will deliver the opening address. A second general session will be held on Wednesday when Dr. Frank G. Boudreau will be present from the health section of the League of Nations at Geneva, Switzerland, to speak on "International Health."

**Minneapolis Meeting of the National Auxiliary.**—The sixth annual session of the Woman's Auxiliary to the American Medical Association was held in Minneapolis, Minnesota, June 11-15, 1928. Over 1200 women registered, and they were delightfully entertained and cared for by the local auxiliaries.

The business meetings were largely attended, four hundred women being present at the all-day session of June 14. Much interest was given to the reading of the papers and state reports. There are now well-organized and efficient units in thirty states.

The abstracted proceedings will be printed at an early date and a copy sent to the entire membership.

The following officers were elected:

President—Mrs. Allen H. Bunce, 360 Ponce De Leon Avenue N. E., Atlanta, Georgia.

President-Elect—Mrs. George H. Hoxie, 3719 Pennsylvania Avenue, Kansas City, Missouri.

First Vice-President—Mrs. Evarts V. De Pew, 115 East Agarita Avenue, San Antonio, Texas.

Second Vice-President—Mrs. David W. Parker, 52 Clarke Street, Manchester, New Hampshire.

Third Vice-President—Mrs. Horace Newhart, 212 West Twenty-Second Street, Minneapolis, Minnesota.

Fourth Vice-President—Mrs. Frank W. Cregor, 1621 North Meridian Street, Indianapolis, Indiana.

Treasurer—Mrs. Irvin Abell, 1433 South Third Street, Louisville, Kentucky.

Secretary—Mrs. M. T. Edgerton, 788 Penn Avenue, Atlanta, Georgia.

Parliamentarian—Mrs. F. L. Adiar, 2500 Blaisdell Avenue, Minneapolis, Minnesota.

Directors for two years—Mrs. John O. McReynolds, Dallas, Texas; Mrs. Wayne W. Babcock, Philadelphia, Pennsylvania; Mrs. A. Haines Lippincott, Camden, New Jersey.

Directors for one year—Mrs. F. P. Gengenbach, Denver, Colorado; Mrs. William E. Parke, Philadelphia, Pennsylvania; Mrs. J. T. Christison, Minneapolis, Minnesota.

Chairmen of committees—Organization: Mrs. A. T. McCormack, Louisville, Kentucky.

Health Education: Mrs. George H. Hoxie, Kansas City, Missouri.

Hygeia: Mrs. A. B. McGlothlan, St. Joseph Missouri.

Publicity: Mrs. T. C. Terrell, Fort Worth, Texas.

Program: Mrs. Southgate Leigh, Norfolk, Virginia.

Finance: Mrs. G. Henry Mundt, Chicago, Illinois.

Entertainment: Mrs. William Kuydendall, Eugene, Oregon.

Public Relations: Mrs. E. H. Cary, Dallas, Texas.

Special appointments—Auditor: Mrs. C. W. Roberts, Atlanta, Georgia.

Historian: Mrs. E. V. De Pew, San Antonio, Texas.

Committee on Health Films—Chairman: Mrs. John O. McReynolds, Dallas, Texas.

Committee on Resolutions—Chairman: Mrs. J. N. Hunsberger, Norristown, Pennsylvania.

Committee on Credentials and Registrations—Chairman: Mrs. James N. Brawner, Atlanta, Georgia.

Special Advisory Committee—Mrs. S. C. Red, Houston, Texas; and Mrs. Seale Harris, Birmingham, Alabama.

**Gold Medal to Doctor Francis.**—A gold medal for the most important and original medical work of the year was presented by the American Medical Association at its Minneapolis meeting to Dr. Edward Francis of the United States Public Health Service for his research on tularemia. The disease was first discovered in a ground squirrel in Tulare County, California, in 1910 by Dr. G. W. McCoy of the Public Health Service.

Since then it has been recognized in forty-two states, the District of Columbia, and Japan, but in no other countries. Of 614 reported cases, twenty-three have ended in death. Doctor Francis himself became a victim of the disease when studying his first case of it in Utah. He has become the nation's outstanding authority on tularemia, which has perplexed science since its discovery in 1910.

It is primarily an epizootic of wild rabbits. It has been traced to *Bacterium tularense*, which produces decay of tissue cells in the liver and spleen. The organs become covered with white spots from the size of a pin point to that of a pin head. Doctor Francis examined the livers of one thousand rabbits offered for sale in Washington, D. C., and found ten, or one per cent, to be infected with the bacteria in a virulent form. The inoculation easily passes to man in the process of dressing rabbits. The infection from the

rabbit's liver will enter a wound in the hand and cause an ulcer, enlarged glands at the elbow and axilla, fever, and confinement to bed.

The disease in man is most prevalent in November, December and January, when cottontails are most generally hunted. Cooks, hunters, housewives, market men and persons who prepare jack rabbits for fish or coyote bait, fox, chicken, hog or dog food, often become infected. After it was discovered in the ground squirrel by Doctor McCoy, tularemia passed to the jack rabbits of the West and advanced steadily across the continent until now there remains only one block of six uninvaded states in New England.

The Public Health Service urges for prevention that bare hands be kept out of wild rabbits. The meat is harmless when thoroughly cooked, since a temperature of 133 degrees F. kills the bacteria. Rubber gloves give complete protection when dressing wild rabbits. A rabbit which a dog has caught or which a boy has killed with a club is likely to be sick. So is the cottontail usually brought in by the tenderfoot—the one which sits still at the point of his gun and is about the only one he can shoot. It is a good rule of health, as well as sportsmanship, to take rabbits on the run at twenty-five feet.

In the history of medicine there is only one instance where American investigators alone have discovered a disease of man, isolated its cause, determined its source of infection and the modes of transmission to man, described its symptomatology and pathology and elucidated the other essentials making up the complete knowledge of the disease. That instance is the story of tularemia.—*J. Missouri M. A.*

#### Interstate Postgraduate Assembly at Atlanta Georgia.

On October 15 to 19, 1928, at Atlanta, Georgia, the Interstate Postgraduate Assembly of North America will hold a series of meetings at which many of the leading physicians and surgeons of America, as well as a number of celebrated foreign colleagues, will present papers. The railroads throughout the United States are offering special rates to this convention. The scientific program which has been published indicates that all the major aspects of medicine, surgery, and the specialties will receive very broad consideration.

#### Anniversary Celebration for Dr. William C. Gorgas, Washington, D. C.

—The Gorgas Memorial headquarters here announce anniversary plans for October 3, the birthday of Dr. William Crawford Gorgas. The fight of Gorgas against yellow fever and malaria and his administrative genius as Surgeon-General of the Army during the World War, as well as his famed work in the field of sanitation are to be stressed in these meetings. Thirty-three health corps of the Memorial will participate.

Of particular importance in this year's citation of the various efforts of the Memorial to honor the name of Gorgas is the statement that "one of the leading scientists in the field of tropical medicine" will soon be chosen by the scientific board of the organization to take charge of the laboratory in Panama. This laboratory is made possible by an annual appropriation of the United States Government of \$50,000, which is to be supplemented by grants from some twenty-one South and Central American countries.

Panama has given over the use of a magnificent edifice recently erected for a proposed school of medicine to the Memorial, and it is predicted by Memorial officials the research campaign will be under way by November 1 in these quarters.

## TWENTY-FIVE YEARS AGO\*

### EXCERPTS FROM OUR STATE MEDICAL JOURNAL

Volume 1, No. 12, October, 1903

From some editorial notes:

... Reading Notices.—The Kentucky State Medical Association Bulletin has been established as the official publication of the Association, and has reached its third issue. We are certainly glad to see another addition to the number of state association journals, for in time these publications will probably do away with a large number of the cheap and vile so-called "medical journals" that have come up all over the country and thrive on discreditable advertising. Many of these "journals" are owned, body and soul, by one or more nostrum manufacturers, and they are used to aid in debauching the minds of a certain percentage of physicians. ...

... Another Spasm.—The Poor W. C. T. U. has had another spasm, due to a severe shock to its sense (?) of propriety. The lovely old ladies who cannot reason logically are decidedly opposed to letting the West Point cadets smoke; perhaps it is feared the cadets' brains will not develop beyond the caliber of the W. C. T. U.; perhaps there is some other reason. ...

... A law that cannot be enforced is a harmful law, for it teaches disobedience. We all know that sumptuary laws are more commonly honored in the breach than in the performance, and most of us would be quite sure that a nonsmoking rule at West Point could not be enforced in the slightest degree. The increase of drunkenness following the abolition of the Army canteen is well known to all, and stands as a monumental object lesson to the harm a lot of misguided cranks who cannot think logically may do if they are permitted to have the chance. ...

From the Correspondence column:

... Excellent Suggestion.—Santa Ana, California, September 11, 1903. To the Editor of the State Journal: Replying to yours of the 10th will say that Doctor Ball, one of our society members, said yesterday that if we could secure a complete file of the journal he would contribute the binding of the first volume, and suggested that I send a report of each meeting in order that it might become a history of the society and be placed in the library. If you will kindly send us the complete file we will see that each volume is bound and kept in the library. Respectfully yours, H. S. Gordon, Secretary.

From an article on "Lupus Erythematosus" by Alfred B. Grosse, M. D.:

... It is not my purpose to deliver an exhaustive paper on "Lupus Erythematosus" this evening, but simply to present to you a brief epitome of the present aspect of the disease, its therapeutics, a description of the hollaender method, how it was arrived at, and my results with the same. ...

From an article on the "San Francisco Quarantine Station" by Hugh S. Cumming, M. D., Past Assistant Surgeon, Public Health and Marine Hospital Service:

... "The Quarantine Laws and Regulations of the United States, 1903," are the most enlightened, logical

\* This column aims to mirror the work and aims of colleagues who bore the brunt of state society work some twenty-five years ago. It is hoped that such presentation will be of interest to both old and recent members.

and scientific governing any country. While it is true that even the earliest laws of Virginia, Pennsylvania, Massachusetts, and one or two other colonies, provided for detention and disinfection by the air, sun or fire, of infected vessels, and that Congress, in 1799, passed a national quarantine law requiring all officers of the United States to assist in executing state quarantines and directing collectors to require a practice, it is equally true that modern quarantine methods were not begun until about 1880. ...

From an editorial on "A Few Illustrative Cases of Diphtheria" by Fred Grant Burrows, A. M., M. D., San Francisco:

... The Board of Health of San Francisco has kept complete records of the cases of diphtheria that have occurred in that city since 1896. These records show that the disease is increasing; and that the greatest number of cases recorded in any one year occurred during the last fiscal year, 1901-1902. During the six years covered by these records there were 4297 cases of diphtheria and 704 deaths, a death rate of 16.38 per cent. ...

From an article on "Abdominal Drainage" by Stanley Stillman, M. D., San Francisco:

... The present paper is presented not because the writer has any new theories to advance on the subject of abdominal drainage, but because the general views and practice regarding it have changed so greatly in the past few years, that it seems well to submit it to you for consideration and discussion. ...

From the minutes of the California Academy of Medicine:

... The case of Hodgkin's disease was discussed by Doctors Ophüls, Brown and Cheney, Doctor Brown suggesting the possibility of tubercular infection being the cause of the disease. ...

... The case presented by the second patient was discussed by Doctors Tait, Kerr, Huntington, Brown, Cheney, Kugeler, Brunn and Barbat. Doctor Tait suggested that the mass might be a cystic kidney of the adult type, though there were no marked kidney symptoms. Doctor Huntington suggested the advisability of a diagnostic incision under cocain anesthesia. Doctor Brown saw the man a year ago and at that time thought the mass to be an osteosarcoma arising from the pelvis; he thought the anemia due to the stomach trouble and not at all influenced by the tumor. Doctor Cheney thought the surgeons should be called in to make a diagnosis, and that perhaps the stomach trouble might be relieved by removal of the mass, and possibly reduplication of the stomach wall. Doctor Kugeler suggested a mixed retroperitoneal tumor. Doctor Brunn thought it might be a tumor of the adrenal. Doctor Barbat called attention to the possibility of having very grave involvement of the kidney without urinary symptoms. Doctor Kerr said that operative interference had been suggested to the patient, who declined it, and that it was not urged for the reason of his general anemia condition, few red cells and small percentage of hemoglobin. ...

How Medical Ethics May Be Taught.—It is suggested that instruction in "medical ethics" may be carried on advantageously by (1) a short introductory series of lectures on general ethics by a qualified member of the philosophy department of the University; (2) lectures or readings on the historical development of "medical ethics," and (3) concluding with free discussions, in which the students take part, on practical case histories involving different aspects of etiquette and ethics in medical practice.—Chauncey D. Leake, *B. of the A. of A. Med. Col.*



## CALIFORNIA BOARD OF MEDICAL EXAMINERS

By C. B. PINKHAM, M. D.  
Secretary of the Board

News Items, October, 1928

The profession is warned against a woman of forty years of age; weight about 110 or 115 pounds; about five feet three or four inches tall, reported slovenly in appearance, alleged to be a graduate nurse from the Kansas City General Hospital, who has been making a practice of calling on physicians, asking them to come and see her friend, a woman about seventy years of age, whom she usually has in a hotel and who is reported as suffering from an inoperable abdominal tumor, also narcotic addiction. She has imposed on several doctors, obtaining a tube of half-grain morphin sulphate tablets. The profession is requested to notify the State Board of Pharmacy, should she call.

According to reports A. Basquez, alias A. Jackson, who claims to be a full-blooded Mission Indian, was on August 10, 1928, found guilty of violation of the Medical Practice Act and sentenced to serve sixty days in the county jail, suspended on condition that he refrain from further violation of the law. ("News Items," Cal. Bd. Med. Examiners, September, 1928).

According to reports, C. Bradvich, alias Charles Bancroft, pleaded guilty at San Pedro, August 7, 1928, on a charge of violation of the Medical Practice Act and was sentenced to serve sixty days in the county jail, suspended on condition that he no further violate the Medical Practice Act.

Release by Dr. James Compton, former secretary of the State Board of Chiropractic Examiners, of the secretary's salary to Dr. S. J. Howell, his successor, was announced today at the Chiropractic Board headquarters. The release was by stipulation, signed by both Doctor Compton and Doctor Howell. . . . The funds have been frozen since May 5.—*Sacramento Bee*, August 16, 1928.

No expense money means no work to Dr. C. J. Redmond, one of the "straights" of the Chiropractic Board, who Friday turned in his resignation to Governor C. C. Young, due to the fact that Attorney-General held claims for traveling expenses were invalid.—*Sacramento Union*, August 26, 1928.

It is reported that "Dr." J. C. J. Chartier, Oakland druggist, was on September 17, 1928, for the second time found guilty of violation of Section 17 of the Medical Practice Act and sentenced to serve sixty days in the city prison and pay a fine of \$300. His attorney filed notice of appeal. ("News Items," Cal. Bd. Med. Examiners, May, 1928; September, 1928).

Recent press dispatches relate the arrest in San Francisco on August 20 of "Dr." Eugene J. Davis at 1718 Geary Street, San Francisco. "Davis was captured in a raid made on a 'sanitarium' at 1718 Geary Street, operated by Dr. G. W. O'Donnell. Opium valued at \$1000 was seized, as well as several smoking layouts." The records of the Board of Medical Examiners do not show any such individual licensed to practice in this state. The police records show him to be a contractor and reported as a resident of San Mateo.

If Doctor Dale offers to sell you a "cure-all" patent medicine from his blue Marmon coupe parked on some corner, keep him in conversation until an officer can arrive. That's the advice of San Luis Obispo law officers who have received word from Sheriff James C. Byers of San Diego that the "doctor," alias Robert

S. Detle, alias John H. Dale, is wanted in that county on a grand theft charge. According to their description he is about thirty-eight years of age, five feet four or six inches in height, has gray eyes and auburn wavy hair. . . . License number of the car was given as 1-736-771.—*San Luis Obispo Telegram* September 6, 1928.

Damages to the extent of \$50,657 for burns which he received when an electric pad is alleged to have been permitted to get too hot under him, were asked today in a suit filed by Joseph Arnold against William E. Hicks, chiropractor.—*Los Angeles Herald*, August 21, 1928.

According to reports B. J. Holland on September 11, 1928, pleaded guilty in Los Angeles to a violation of the Medical Practice Act and was sentenced to pay a fine of \$250, suspended for two years.

Charged with sale and possession of morphin, Dr. Ernest A. Lupton today was arraigned before Judge Charles D. Wallace and his preliminary hearing set for September 17 in Department 4. Bail was fixed at \$5000. According to D. C. Whipple, inspector for the Narcotic Division of the State Board of Pharmacy, the defendant sold morphin to a woman operator of the department.—*Long Beach Press Telegram*, September 1, 1928.

Hamilton McClarty, a graduate of the Kansas City College of Medicine and Surgery, 1921, applied to the California Board for a written examination at the July meeting, filing a diploma alleged to have been issued by the National University of Belgium dated March 14, 1928. Information received from the American Consul at Antwerp, Belgium, relates: "If there is any institution or organization in Belgium issuing diplomas under the name of the National University of Belgium, it is doing so without proper authorization, as it does not maintain any school or recognized institution, and such a document therefore is entirely worthless from an academic point of view. I have also communicated with the four universities in Belgium, the ones at Brussels, Liege, Ghent and Louvain, and they inform me that no student by the name of Hamilton McClarty has ever been registered with them for any course. It would appear from the foregoing, therefore, that Hamilton McClarty is endeavoring to file with you a document in which no faith or confidence can be placed."

Held on a tentative charge of murder, John Scott, thirty-three, a chiropractor living at 2721 Avalon, was in the county jail today, while sheriff's deputies investigated the circumstances of the death of a woman said to have been one of his patients. . . . Mrs. Albrecht died early this morning in the Mission Hospital, Huntington Park, from the effects of what doctors said was an illegal operation. Before her death she is alleged to have told of visiting Scott's offices and there to have been given an "electric treatment."—*Los Angeles Express*, August 18, 1928.

Osteopaths are entitled to whatever business comes to their doors, but they may not go after it. That is the sense of an opinion on file today in the District Court of Appeal denying a new trial to Merrill E. Thomas before the State Board of Osteopathic Examiners. The board revoked Thomas' certificate in June, 1926, alleging that Thomas had used a capper to drum up trade for him.—*San Francisco Call*, August 17, 1928.

According to reports Irving L. Ward, M. D., was on August 30, 1928, found guilty in Judge Bacon's court, Oakland, California, on a charge of violation of the Medical Practice Act and sentenced to pay a fine of \$100 and serve sixty days in the city prison.

